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WHAT HAVE WE LEARNED ABOUT DEVELOPMENT?

John H. Adler

[Public policy can stimulate and sustain economic growth. Crucial areas are: capital formation, balance of payments, public management, private entrepreneurship, education, and population. Project planning and modernizing agriculture have proved to be particularly difficult; many questions about education policy remain.]

The tenth anniversary of the foundation of the Economic Development Institute has been an occasion for reflection on whether, in the last ten, fifteen, or twenty years—since the advancement of the less developed areas of the world has become a matter of major concern for the world as a whole—we have learned something about the development process that we did not know or were less sure about then. Since my professional background is that of an economist, my subject is perhaps best confined to: What Economists Have Learned About Development. However, I would not expect everybody to agree with my list of the major pieces of knowledge which economists claim in the field of development economics.

Underdevelopment, the poverty of nations, is not preordained and immutable. Economic development can be stimulated and sustained by deliberate action. We may still argue about the superiority of one set of measures to promote development over another set, but economists as a group have

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learned that there is always something that can be done to foster and promote and cajole economic growth.

There is a negative and sobering corollary to this activist view: that the process of development is complicated and fraught with uncertainties. But in spite of these and the feelings of frustration which plague their efforts, economists have enough of the courage of their convictions about economic development to come up with a series of assertions which they find generally valid and useful in their application.

Capital Formation

The first one, which the experience of the last twenty years has proved over and over, is that capital formation is an indispensable ingredient of economic development. It is, of course, incontrovertible that the creation of productive facilities is one measure, one means, of stimulating economic growth. Some would go so far as to say it is economic development.

The rate of capital formation seems to be paramount because something can be done about it—which is not true of many other ingredients of the development process. The emphasis on capital formation provides not only a convenient point of departure for an analysis of the process of development, but also give us a useful starting point for development policies. There is much that policy-makers can do to stimulate savings and to allocate investment in a rational fashion.

Balance of Payments

The second thing that we have learned about development is that the balance of payments is a matter of major concern. International trade and capital movements, foreign investments, and the availability of foreign aid are important ingredients of the development process. The greater a country's export earnings and the smaller its dependence on imports for consumption, the better are its prospects for development. It is quite clear that the size of the export earnings of a country, together with the size of the debt-service obligations prevailing at any given time, are important factors governing the pace of development. Constant vigilance and concern about the external balance of an economy are essential if the development process is to go forward at optimum speed.

There is something very special about the international transactions of any country, particularly of a developing country. It is erroneous to measure the contribution of foreign capital, or foreign investment, or foreign aid, simply in terms of the addition which

these make to the total of available resources. The contributions that foreign resources make to a development process are disproportionately important because they permit some leeway to policy-makers and to the anonymous forces at work in the economy. They make it possible to forget about the production of some things which a country cannot produce except at exorbitant cost, and to obtain from abroad things that the economy really wants and needs for less effort than it would have cost to produce them.

Planning

The third lesson of experience is that planning and, more generally, good and intelligent economic management can improve the performance of an economy, particularly with respect to capital formation and to the balance of payments. I believe that nowadays most economists would agree that planning is essential in making a development effort fully effective. Planning involves some stock-taking, to see where an economy stands, what resources are readily available, and what resources are likely to be available in the future. It also involves a deliberate attempt to explore systematically what is likely to constitute the most efficient and effective use of those resources. All these things have come to be accepted as ingredients of the planning process, as a task of any responsible government, irrespective of the government's or the country's political orientation.

Much progress has been made in recent years in aggregative planning (i. e., planning for a country as a whole). By contrast, the identification and selection of specific development projects, and their subsequent preparation and economic evaluation, are subjects in which, unfortunately, progress has not been widespread. The limit on the effectiveness of aggregative planning is generally determined by the degree of the planners' familiarity with the techniques of project evaluation.

Agriculture

Contrary to expectations fifteen or twenty years ago, it has turned out that industrial development is much easier than the expansion of agricultural production. The countries which have made most progress in development in all the continents have made this progress largely in industry, while agricultural production has lagged.

I am not suggesting that agriculture should have increased as much as industrial production; because of the changes in the structure of demand and supply associated with the development process, one would expect a lower rate of growth. But it is a sad fact that

today the most serious limitation on human welfare the world over is that, for a variety of reasons, agricultural production has not risen as much as had been expected and hoped for.

The importance of agricultural production is further enhanced by the fact that most developing countries are now coping with unprecedented rates of population growth. In the last few years, many countries have become aware that they have a major agricultural problem on their hands.

One of the reasons for the neglect of agriculture, and of misunderstanding of the role which agricultural production must play in the development process, is that the leaders of many underdeveloped countries underestimated the importance of agriculture and therefore tended to misunderstand the emphasis placed on it by development experts from advanced countries. Some people in developing countries seemed even to resent this emphasis as forming some sort of a conspiracy to keep the underdeveloped countries tied to their farms and plantations, leaving industrial production to the more advanced countries. This is nonsense, just as it is nonsense to think of economic development simply as a process of industrialization. One of the lessons of the events of the last ten or twenty years is that economic development does not mean industrialization alone, but demands an expansion of agricultural production (any many other things) as well.

The Role of Government

Another matter on which our understanding has deepened and widened is the role of government in the development process. This inevitably results in the government's taking responsibility for the creation of such economic infrastructure as power and transportation (including port installations); the government is also bound to take responsibility for social infrastructure, particularly in connection with rapid urbanization. Schools, hospitals, sewers, and water supplies are facilities which government must provide if the transition of society from that of an essentially primary-producing economy to a more advanced economy is to take place smoothly. Government also has to make a contribution to capital formation by increasing public savings and stimulating private savings. It does not follow from this that the government must emerge as an all-powerful authority. But government certainly has to assume many new tasks—tasks which go much beyond the maintenance of law and order.

* * *

The five points that I have mentioned—the role of capital formation, the importance of the balance of payments, the significance of

the planning process, the re-emerging emphasis on agriculture, and, finally, the enhanced role of government—are the things that I think most economists would point out as those factors which, in the last decade or two, have emerged as being prime determinants in the development process. But I think economists have also learned that there are certain factors which go beyond their customary field of professional competence but must nevertheless be reckoned with if their advice and guidance are to be accepted.

Population Growth

One is the importance of population growth. Recently I spent some time at the Second World Population Conference, from which there emerged broad agreement—with a surprisingly small number of dissenters—on four issues.

First, the importance of slowing down the growth of populations arises not so much from the fear of famine as from the need, when population is rising rapidly, to devote a larger proportion of resources to consumption and to allocate a large share of investable resources to what economists call the widening of productive facilities. If there are more children, the community needs more schools, larger houses, more factories to produce clothing for them, and so on. This leaves less capital for "deepening" productive facilities—to install more machines per worker or, more generally, to have more productive facilities per capita.

Second, means for family planning are now available at a cost which even the poorest can afford.

Third, there remains, nevertheless, a major, not to say overwhelming, organizational problem: how to bring these technical improvements in family planning to the large masses of population at all social levels and in all parts of a country, particularly in rural areas.

Fourth, perhaps the most important and most difficult aspect of the population problem is to convince people of the wisdom of family planning and to persuade them to have smaller families.

Enterprise and Management

The next point is the importance of enterprise and management skill in the private sector and the need for improved competence of administration in the public sector of developing economies. Many economic historians have emphasized the importance of entrepreneurship—the willingness and the ability to seek out investment opportunities and to run an enterprise successfully—in the development

process. Even if one does not accept the argument that entrepreneurship is more fundamental than capital because capital formation is the result of entrepreneurial activity, one must recognize that entrepreneurship is of prime importance. Equally important, on the public side, is the competence of civil servants and the managers of state enterprises.

Good public administration is essential for bringing about smoothly the many structural changes which are an integral part of the development process. Moreover, the competent management of state enterprises, quite aside from its implications for allocation of resources to their most effective uses, may set an important example to the private sector. In practice, it is often the other way around—it is the private sector which has to set the example of good administration to the entrepreneurial activities in the public sector.

Education

My last point likewise goes beyond the narrow framework of economics, but I would think most economists would readily accept it as one of the major lessons of the experience in countries all over the world: education and the provision of new skills, or perhaps a new mix of skills, is indispensable for development. The problem is actually deeper than this. In many developing countries, the kind of education now given may only impart traditional concepts unrelated, or even inimical, to a country's development needs. It may, for example, make its recipients feel that the work most needing to be done is beneath them.

Unfortunately, we still do not know much about the relation of education to economic growth and have not yet come to grips with the practical problems of education and educational planning. How many people have to be educated? For what skills? What should be the proper content of education? What is the best mixture of general knowledge and specific knowledge? All these are important questions in the field of education for which answers still have to be sought. There is, moreover, the very important and very vexing problem of the high cost of education in terms of financial resources and in terms of competent manpower.

This, I believe, exhausts my list of what economists have learned about economic development. The list is not long, but with good reason: there is no country with a development problem, but only countries with a great variety of development problems. It is this diversity that makes development, and particularly the practical problems of development, so challenging and stimulating. An understanding of development does not come easily—either to the analyst or to the practitioner of what some are daring enough to call the

science of development, although others call it an art. Whatever it is, it is boring only to those who are afraid of change.

[Excerpted from The Fund and Bank Review: Finance and Development, International Monetary Fund and International Bank for Reconstruction and Development, Washington, D. C., Volume III, Number 3, September 1966, no charge, pp. 159-164.]

PLANNING IN THE CONTEXT OF LIMITED FOREIGN AID

Mahbub ul Haq

[Total volume of international development assistance is growing very slowly. How can planners achieve or maintain rapid growth within this constraint? High marginal savings rates, export promotion, and import substitution are key elements. Pakistani experience indicates that policy tools needed to achieve these results are available to planners.]

Anyone from the developing world surveying future prospects of foreign assistance will find little cause for cheer in the recent trends. While the claims on foreign assistance are increasing rapidly—both from the old recipients, armed with ever more ambitious development plans, and from some new countries joining the swelling ranks of the recipients—the net flow of foreign assistance has been stagnating.

A quick survey leads to rather gloomy results. The government-to-government assistance, net of repayment of capital by the developing countries, has tended to stagnate in the last five years. The total flow of such assistance from DAC countries [countries participating in Development Assistance Committee (DAC) are: Austria, Belgium, Canada, Denmark, France, West Germany, Italy, Japan, the Netherlands, Norway, Portugal, Sweden, United Kingdom, United States] has remained around

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\$6 billion between 1961 and 1965. If official capital from the World Bank and non-DAC countries is taken into account, total disbursements show an increase of about 5 percent per annum during this period. Allowing for a rise in the prices of commodities supplied by the donors, additional price increase as a result of the tying of credits, increasing GNP in the donor countries and increasing populations and investment programmes in the recipient countries, and repayment of not only the principal but also the interest on the loans, it is quite obvious that in real and relative terms the net flow of foreign capital to the developing countries has actually been declining for the last five years.

Prospects for Foreign Assistance

What are the future prospects of foreign assistance? Only a confirmed optimist would dare hope today that the net flow of foreign capital to the developing countries would reach a level of \$20 billion by 1970, which was projected a few years ago by the United Nations as the requirement to meet the balance-of-payments deficit of these countries given a growth rate of 5 percent per annum.

Though any predictions about future levels of foreign assistance are likely to go wrong, the planners in the developing world cannot help making some assumptions in formulating their current medium- and long-term plans. One reasonable hope would be that the total net flow of capital keeps increasing at about the same rate as in the recent past. On this assumption, foreign assistance may be in the range of \$14 to \$15 billion by 1970, of which about \$10 billion may represent government-to-government assistance. If one accepts such a dismal prognosis for the future, certain policy implications immediately follow:

1) Foreign assistance will be a declining, or, at best, a steady proportion of the GNP in many of the developing countries for the next five years. The average growth rate in the developing world is currently between 4.5 and 5 percent per annum and many of the major recipients, like India and Pakistan, have plans for an annual growth rate of 5.5 to 6.5 percent in the next five years. If foreign assistance increases at a rate no higher than 5 percent per annum, it is obvious that the recipient countries cannot expect such assistance to contribute an ever increasing, or even a constant, share of their future investment programmes. Many countries have not yet reconciled themselves to such a prospect and it is quite common to find in their plan projections an expectation that a rising percentage of the GNP would be contributed by foreign assistance. Some countries may be able to realize this expectation, but certainly not all and not at the same time.

2) A logical corollary of the proposition that foreign assistance may be a declining proportion of the GNP and investment level in most developing countries in the next five years is a high marginal rate of saving, a sizeable import substitution programme, and fairly ambitious growth targets in exports if their current development plans are to stand a decent chance of implementation. Since national income in these countries is generally being planned to increase by 6 to 7 percent per annum, it follows that the annual growth rate in exports should be maintained at about the same rate as the growth of national income, or else a much heavier burden would fall on the import substitution effort of the country concerned. Despite such high export targets, sizeable import substitution would still be necessary since investment is planned to increase at a rate higher than the GNP in many developing countries. Again, as the proportion of foreign assistance declines in total investment, an ever increasing contribution would need to be made by domestic savings, thus leading to a high target for marginal saving rate.

3) So far as the donors are concerned, a slow increase in their assistance relative to the requirements of the developing world is likely to generate pressures that programming of foreign assistance should be improved and its real content increased by changing the terms and conditions on which it is presently available.

Planning Within Foreign Assistance Constraints

It appears that the planners in the developing world will have to learn to temper their ambitious growth targets for the future with a certain sense of realism about the possible availability of foreign assistance to implement these plans. While the UN suggested an annual growth target of 5 percent for the Development Decade of the 1960s, and while the actual performance in the first half of the decade was somewhere between 4.5 and 5 percent, most developing countries are currently planning growth rates of between 6 and 7 percent for the next five years. The long-term plans of India and Pakistan are based on an annual growth target of about 7 percent. A recent tabulation of the growth rates planned by the ECAFE countries for the next 10 to 15 years yielded an average rate of 6.4 percent.

The anxiety to generate growth rates of 7 percent or over is legitimate and understandable. Such a growth rate, maintained over a twenty-year period, would quadruple national income. Since populations in these countries are expected to increase at the annual rate of 3 percent or so, which would double present populations in a period of 20 to 25 years, a 7 percent growth target in GNP really implies a "per capita income doubling plan" over two decades. Most countries are increasingly attracted by such an income doubling plan and are committing themselves to it in their long-term, perspective plans.

It is important, however, that these long-term growth targets should be based on a realistic appraisal of the availability of foreign assistance so as to formulate appropriate policies for domestic saving, exports, and imports. If the planners of the developing world ignore the post-1960 trends in foreign assistance and still live in the dizzy atmosphere of the pre-1960s, when such assistance was increasing at a rate of about 15 percent per annum, they run the risk of jeopardizing the implementation of their development plans.

It appears that this is being increasingly recognized. A case in point is the perspective plan of Pakistan for the period 1965-1985. The planned growth rate of a little over 7 percent per annum will just about quadruple the current GNP. In order to achieve this growth rate, investment is projected to increase at a rate of 8.5 percent per annum, i. e., somewhat faster than the GNP. A marginal rate of saving of 22 percent was achieved during 1960-1965 and a somewhat higher target of 25 percent is postulated for the next 20 years. This will increase domestic saving sufficiently to reduce the net requirement of foreign assistance from about 8 percent of the GNP in 1965 to only 1 percent by 1985. Exports are planned to increase at the rate of nearly 8 percent per annum, slightly faster than the GNP. This would permit imports to expand at a rate of about 4 percent per annum, considerably less than the growth of the GNP and investment, thus necessitating sizeable import substitution. The total import substitution implicit in the perspective plan is 12 billion rupees (or \$2.5 billion), which means that about 10 percent of the additional output during this period will have to originate in the import-substituting sector. The success of the plan, on the financing side, will largely depend on the extent to which the economy can generate the required marginal rate of saving, additional exports, and import substitution effort.

A Recommended Strategy

The illustration provided from Pakistan's perspective plan is typical of the strategy which will have to be adopted in the developing countries if per capita incomes are to be doubled over the next twenty years or so without relying on optimistic levels of foreign assistance. The actual figures are unimportant; they will vary from one country to another, but the main elements of the basic strategy can be summarized as follows:

- 1) Investment should be planned to increase at a rate faster than the GNP, which is generally a condition of accelerating growth rates. If the long-term growth target in GNP is about 7 percent, typically the increase in investment will be about 8 to 10 percent per annum.

2) Domestic saving must grow faster than total investment, implying a marginal rate of saving considerably higher than the average. Typically, marginal rates of 20 to 25 percent will be required.

3) Export growth target should generally be equal to the growth target in the GNP, or somewhat in excess of it, in order to relieve the burden of the import substitution effort that the country has to undertake.

4) Imports should be planned to increase at a rate much slower than both the GNP and investment. Implicit in this is sizeable import substitution.

Is Such a Strategy Feasible?

Is there any prospect that the developing countries will be able to achieve a growth target of 7 percent per annum even when foreign assistance does not increase at a substantially higher rate than in the recent past? Or should the planners scale down their sights? One cannot possibly take any definite position on this question: in the last analysis, it all depends on whether the country concerned can take the policy decisions outlined above.

A marginal rate of saving of 20 to 25 percent may appear to be quite ambitious in the context of the current average domestic saving rates of 10 to 12 percent in most of the developing world, but it is entirely manageable. Pakistan, for instance, managed a marginal saving rate of 22 percent in the last five years despite the fact that its average gross domestic saving was only about 6 percent of the GNP in 1960. The growing sectors are generally the saving sectors, so that higher savings result from additional incomes.

To pursue Pakistan's example a little further, there were three factors mainly responsible for the high marginal saving rate experienced by Pakistan in its Second Plan. First, the large-scale industrial sector, which grew at a rate of about 15 percent per annum and represented the so-called "capitalist" sector in the economy, was made to save about 75 percent of its profits after taxes through a variety of fiscal incentives. Second, the government managed to increase its revenues faster than its current expenditures, largely due to its additional taxation effort, so that the marginal rate of saving in the public sector was about 40 percent. Third, the exporters of primary commodities (which form the bulk of Pakistan's exports) were denied an adequate return by keeping an overvalued rate of exchange while import priorities were so devised as to devote nearly two-thirds of the export earnings to imports of capital goods and raw materials for capital goods. Thus, by exploiting the high saving

margins in the industrial, import, and government sectors, a high marginal saving rate was achieved in an economy where agriculture contributes about 50 percent to the GNP and where direct agricultural taxation represents only 1 percent of the total agricultural income. The main point is that low average saving rates are quite consistent with high marginal saving rates because growing sectors tend to save much more than the average.

In countries planning to increase their national income at a rate of 6 to 7 percent per annum, exports must grow at about the same rate as the GNP if import substitution programmes are not to become unrealistically large or economically inefficient. An annual increase of 6 to 7 percent in export earnings over the next two decades may appear to be extremely ambitious, particularly in the context of the poor prospects projected for primary exports of the developing countries. Invariably, this throws the main burden on the exports of manufactured goods from the developing world, which must increase at a rate of about 10 percent or more.

It is not impossible to generate such an expansion in manufactured exports. In fact, the additional manufactured exports would represent only a small proportion of the additional industrial capacity planned in these countries. What may be lacking is not the existence of exportable surpluses but their actual disposal in the international market. And here one of the major handicaps will be the overvalued exchange rates which many developing countries are presently maintaining. As a recent UNCTAD report has remarked: "The temptation to maintain such overvalued exchange rates arises because a major proportion of the exports of the developing countries consists of primary commodities, for which existing exchange rates may often be appropriate, and a substantial proportion of imports is in the form of capital goods and industrial raw materials, the domestic costs of which are often kept low as a matter of public policy.... By maintaining such overvalued exchange rates, these countries are in fact offering an unintended subsidy to the manufactured goods of the developed world."

This problem can often be handled by establishing a different effective exchange rate for primary exports and essential imports, on the one hand, and manufactured (or nontraditional) exports and less essential imports, on the other hand. In fact, the developing countries should maintain, as a matter of deliberate policy, a considerable undervaluation of their currencies in relation to their expanding manufactured exports. And the developed world, along with the custodian of good international monetary ethics, viz., the International Monetary Fund, should encourage the establishment of appropriate dual exchange rates for the developing countries. There should be no fear that such a move on the part of a large number of developing countries would worsen the balance of payments

of the developed world, because additional exports of manufactured goods that the developing countries generate are likely to be matched by their additional imports from the developed world and are not intended to build up reserves.

Even when fairly high export targets are postulated, many developing countries will find that they will require a considerable amount of import substitution. This import substitution may take several forms, e.g., food grains imported before may be domestically produced now; fertilizers and other inputs for agriculture and industry may be manufactured at home; some of the capital goods industries may be established domestically, etc.

The size of the import substitution effort implicit in long-term plans is generally so large that, at some stage or the other, it involves the manufacture of some of the previously imported capital goods. This is what has led to the currently fashionable talk about regional cooperation among developing countries in view of the limited markets of some of these countries for the efficient manufacture of intermediate and investment goods. Unfortunately, there is entirely too much loose talk in this field and grand ideas of economic integration between various countries are tossed up in the air without any realistic thinking as to what kind of import substitution is required in different countries and how best it can be coordinated. Many large countries like India and Pakistan establish several separate units of a particular basic industry (like steel) and operate each unit considerably below capacity while protesting loudly that they need regional cooperation to dispose of the products of these basic industries!

Very little work has been done so far on what kind of imports will be required by the developing world by 1970 to 1980 and what elements in the total imports can be substituted for economically, and whether this can be done more efficiently on a national or a sub-regional or a regional basis. An operational approach to this problem would be to identify concretely the areas of import substitution in the context of the long-term national plans of the developing countries and to proceed on an industry-by-industry basis to find out whether "areas of agreed specialization" can be established for any particular industry or for a set of industries between a number of countries. Such attempts have recently started, but considerable further work remains to be done.

[Excerpted from "Foreign Assistance: Some Critical Issues," a paper presented to the Second Inter-regional Seminar on Development Planning, Amsterdam, Netherlands, 19-30 September 1966, UN Document No. ISDP. 2/A/R.6, pp. 1-18. The full text will appear shortly in the report on the Seminar, Planning Domestic and External Resources for Investment, a United Nations publication.]

ORGANIZING TO RECEIVE AID

Receiving development assistance from a number of separate sources presents problems to planners. Donors are imperfectly acquainted with the needs and priorities of the recipient countries; where they are acquainted with those needs, they may be prepared to consider only a limited range of them; assistance given by different donors may not be complementary, or may even overlap. The planner in the receiving country needs to have the best possible guesses of the amounts and kinds of assistance his country will receive, and of the kinds of projects which may interest donors. Multiplicity of aid sources and unpredictability of donor intentions create or compound these problems.

From the point of view of the development planner in a low-income country, channelling aid through one international organism would simplify many of these problems. However, suggestions to this effect notwithstanding, such a solution seems exceedingly unlikely. Therefore, it is useful to consider the ways a country should organize itself to best receive aid from a number of sources.

Leonard KORNFIELD considers the organizational problems of aid receiving in general. Eugene ABRAMS describes efforts by Thailand and by countries and international organizations giving aid to Thailand to coordinate the assistance to that country.

MANAGEMENT AND COORDINATION OF EXTERNAL ASSISTANCE

Leonard Kornfeld

[How can a country best coordinate its efforts to obtain aid and the assistance offered it? Leonard Kornfeld suggests some administrative arrangements from which a country might select those that suit its circumstances.]

Management and coordination of external development aid by recipient countries takes place within the more extended process of planning and implementing development activities.

The activities that come under this heading involve programming, processing, negotiating, and administering the external assistance inputs to development. In this paper, the term coordination is used to cover this complex of functions.

Recognition that aid coordination is distinct from development planning and project implementation is an important first step in improving the process. Planning, *per se*—at least the investment aspects—has received considerable attention. So has project implementation. But there is a gap in the technique of getting from one to the other. To close this gap requires, inter alia, improved coordination of external aid.

The coordination of external development assistance has been receiving increasing attention, but mostly from the donor side and with the emphasis on exchange of information and avoidance of

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duplication. There is, however, general agreement that coordination, i. e., planning for the use of external resources to achieve maximum effect on development, requires the recipient country to develop its own institutions and machinery.

Coordination, as seen from the recipient-country standpoint, has two facets: relationships with donors, and relationships among its own ministries, bureaus, and departments.

Recipient countries need to make a deliberate effort to coordinate external assistance, even if it all comes from one source. For example, they would still need to concern themselves with the suitability of loan terms on a series of projects in relation to the overall payments prospects of their countries; they would still need to assure themselves that expertise being sought abroad was not available at home; and they would need to arrange for optimum use of any assistance received. The external assistance coordination process is concerned with these and other matters.

In the real world, the one donor-one recipient relationship is unlikely. According to an OECD study of some 80 independent developing countries surveyed in 1963, 42 were receiving technical assistance from five or more bilateral donors, with the number of donors reaching as high as 10. To fully appreciate the complexity of the situation, it is necessary to add to the list of donors the multilateral agencies (both UN and regional), private foundations, and voluntary agencies. In addition, there are the external services financed and procured directly by the various agencies of less developed countries. The likelihood is that the number of individual donors and similar entities active in providing external assistance in any one country will increase rather than diminish in the coming years.

The developing countries often do not take a full advantage of the outside resources actually and potentially available due to inadequate coordination, especially as regards technical assistance. Not all assistance is appropriate or suitable. Yet some developing countries accept any and all aid, in any amount and in any form, without considering the economic or other costs to themselves. Some may pay inadequate attention to their own developmental priorities and to the substitutability of the claims they could make on donor resources.

The entire responsibility for inefficient selection and use of external assistance cannot, of course, be placed on the shoulders of the recipient countries. There are limitations on what the host country can do in the absence of parallel and supporting action by the major donors.

Almost all developing countries have some sort of coordination machinery, ranging from inter-ministerial committees with no secretariat to full-fledged ministries of coordination. This article attempts to indicate the range of functions that are being or can be performed by recipient-country coordination institutions and to analyze their role, status, and location within a government structure. There is obviously neither a single form of organization nor a standard set of functions that will fit every country. The coordination role has to be tailored to each situation. However, it is possible to suggest criteria which may be useful in resolving issues, country by country.

It is also recognized that some of the functions listed imply a degree of administrative competence found in few aid-receiving countries. Still other functions would require a disproportionate use of scarce administrative manpower if they were to be fully implemented. Thus, the functions described should be considered a shopping list from which individual countries will have to choose, to fit not only their needs but also their purse.

External development assistance takes a variety of forms, e.g., program and balance-of-payments loans, capital projects, commodity support, and technical assistance. The emphasis in this essay is on coordination as it applies to the form of assistance where the problem is most complex and also most in need of improvement: technical assistance.

The Place of External Assistance Coordination in Development Planning

It does not seem possible to devise a generally applicable rule for exactly where the planning function should stop and the coordination function start; or to indicate precisely where the role of the coordination unit should end and that of the implementing agency should begin. What should be avoided, however, is a rather prevalent tendency to blur the lines of demarcation, e.g., to leave uncertain where the responsibility of the planner stops and that of the coordinating agency starts.

Level and type of authority. The question of level and type of authority is equally difficult. Some approaches stress the importance of limiting the role of the coordinating institution to that of an advisory body; others conceive of the institution as having decision-making power. It seems clear that, to be most effective, the coordinating institution should be more than simply advisory. The real question is whether the unit should be a purely staff operation, seeing that decisions made by others are carried out, or whether its authority should include operational responsibility. The emphasis should

be on the staff role, but with some operational duties, as will become apparent when the possible functions of a coordinating agency are delineated in the next section. A pure staff operation is probably too abstract.

As will also become evident, a considerable part of the operational activities of a coordinating institution are not so much decision-making, but rather of a servicing character. This is a significant distinction. The ability of a coordinating institution to achieve acceptability and cooperation from functional ministries and from donors—without which its chances of success may be seriously impaired—can often hinge on its being able to provide services as well as to exercise control.

As to the level at which advisory, staff, and operational functions are exercised, there is general agreement that this needs to be both close to the center of power in a government and in a controlling position with regard to the operating agencies of government.

Capital- and technical-assistance coordination. Both practice in developing countries and the opinions of writers differ on whether there should be separate institutional machinery for the coordination of external technical and capital inputs. In theory, the most constructive approach would provide for a unified coordination institution, but with separate sub-units dealing with capital- and technical-assistance inputs. However, it is often argued that separation is pragmatically desirable because the staff time and resources of a unified agency and the attention of policy-level officials will be devoted almost exclusively to the "big money" items, leaving little time for technical assistance.

The advocates of a separate agency for handling technical-assistance coordination also point out that the substantive matters dealt with in technical assistance are more complex, more detailed, harder to relate to development plans, and often concerned with activities that have a five-to-ten-year lead time with respect to related financial assistance.

The decision on which organizational path to pursue in a given country should probably be a function of the status and level of planning in that country. Where sector planning is well advanced and where the national development plan covers institutional and human-resource development needs in the same detail as investment needs, a unified coordination agency is indicated. Where this degree of long-range, detailed planning is not present (and this is the case in most developing countries), it is probably best to consider separate institutional machinery for technical-assistance coordination.

Reliance on development plans. Most writers stress the need for a development plan as a framework within which a coordinating unit carries out its functions. Some consider it a necessary precondition for the functioning of a coordination entity. Unquestionably, certain aspects of the work of a coordinating unit are dependent on the existence of a development plan. However, external assistance is sought and received in countries where there are no development plans, where those that exist are of academic interest only, or where the planning is not very detailed, i. e., doesn't get down to the project level. There is still a role for coordinating machinery in these situations. The creation and structuring of coordinating machinery should not be made conditional on the existence of a formal development plan.

Even the existence of a well-thought-out set of macroeconomic, sector, and project plans is not a substitute for the coordination function. As concerns external assistance, the planner and the coordinator deal with different sets of problems.

What an External-Assistance Coordinating Agency Can Do

The possible functions for an external-assistance coordination agency encompass: 1) programming, 2) processing, 3) negotiating, 4) administrating, and 5) evaluating.

1) Programming. There are essentially three operations involved here: a) to obtain from all functional agencies, on an orderly basis, current "operational" descriptions of their individual requirements for technical assistance; b) to see that those proposals for projects or other forms of aid are checked for consistency with agreed development plans and other policy considerations; and c) to bring about a consensus as to the relative priority of the various external-assistance requirements.

Obtaining descriptions of requirements involves the designing of standard forms on which requirements are described, justification provided, and related cost and source of financing indicated, so that one request can be compared with another.

The coordinating agency must have authority to set strict time schedules for submission of requirements. Consideration should be given to relating the submission of external-assistance-requirements estimates to the coordinating unit with submission of overall ministry budget requests to the Ministry of Finance.

Certain kinds of checking for consistency can be done directly by the coordinating agency, e. g., to see that there is no unnecessary duplication in proposals either in or between functional agencies, to

determine that a given survey hasn't already been made, and to ensure that thought has been given to making available necessary local skills and resources as the project progresses.

Various other checks, e.g., consistency with the development plan and a determination that the skills or other resources are not locally available, require expertise which would not normally be present in a coordinating agency. The agency, consequently, should have authority to call meetings of appropriate officials to scrutinize proposals from a policy and technical viewpoint, or to assign such reviews to other bodies (e.g., planning boards and/or universities).

Where substantial call on fiscal resources—either present or future—would be occasioned by implementation of the proposed project, the coordinating agency should also obtain the approval of the Ministry of Finance at this point in the process.

In some countries, the determination of priorities is the responsibility of the coordinating agency, which decides which requests will be submitted to potential donors, which will be financed from available foreign exchange, and which will be postponed or rejected. In other countries, the coordinating agency performs more of a staff function and organizes and collates the requests in such manner that an inter-ministerial committee, or other policy-level body, can take the necessary decisions. The coordinating agency may or may not be authorized to make recommendations for this purpose. It may also be authorized to undertake informal soundings with potential donors before seeking policy decisions.

2) Processing. Once the decisions have been made as to what external assistance should be sought or procured directly, there remain a series of unanswered questions: what is the best source for a given type of assistance; what type of documentation does each potential donor require; when is each prepared to consider requests?

The function of the coordinating agency is to prepare each project—or see that it is prepared—in an appropriate form.

In order to perform this task, the external-assistance coordination unit must become knowledgeable about, and act as the central repository in the government for information on, sources and conditions of external assistance. It must maintain up-to-date lists of potential donors of all sorts and knowledge on the type of assistance each is prepared to consider. It must also acquire expertise on such matters as the criteria for approval used by different donors.

The coordinating unit should not limit its range of information-gathering to regular, institutional donors, but should also undertake

the systematic building up of information on specific training opportunities, sources of expert recruitment and the obtaining of other services on a self-financed basis.

A judgment on the availability of external assistance is also necessary in order to prepare project proposals suitably. The coordinating unit should be authorized to call informal meetings of potential donors and undertake other soundings for this purpose at this point in the process.

A decision on where to turn for external assistance is not exclusively related to where the service can be obtained. Many donors offer a variety of forms of assistance in many substantive areas. There is often a wide area of choice available to the recipient country. To the extent that a recipient government can determine and enunciate policies on which donors it wishes to use in what capacity, for which kinds of projects, and in what fields, the problems of coordination of external assistance will be greatly simplified.

3) Negotiating. The responsibility for actual submission of assistance requests to potential donors, and the consequent negotiation of individual projects (e.g., reaching agreement on terms and conditions) can be left to the appropriate functional agency within clear limits prescribed by the coordinating unit, or can be performed by the coordinating unit acting as the agency of the end user.

There is much to be said in favor of placing primary responsibility for negotiations with the coordinating unit, and in providing for adequate clearances by the functional agency. This enables uniform standards to be applied and presentations to be made to potential donors on a national basis.

4) Administrating. There is a wide range of services concerning the administration of external assistance which can most efficiently be performed on a centralized basis. As concerns technical assistance, some such services are described below.

With regard to all out-of-country training, the coordination agency can provide predeparture orientation, arrange for and/or administer language training, process documentation required by donors, assure that the trainee understands the purpose of the study grant, channel progress reports to interested parties, assure appropriate reemployment upon the trainee's return, and conduct follow-up and evaluation studies.

With regard to all incoming foreign technical assistance, it can arrange for security and qualifications clearance, provide local orientation, arrange for housing, customs clearances and other

personal services, create and execute standard contracts for foreign nationals employed by the government irrespective of source of financing, assist in getting technicians established in ministries where they are to work, and arrange for briefing and debriefing sessions with the professional and technical officers concerned with the expert's work.

In some countries, the coordinating agency is allotted the funds to pay for the local costs of technicians and for the host-government obligations concerning trainees and other scholarship holders. Such control of the purse strings can help to strengthen the authority of the coordinating unit. Moreover, there is considerable value in having a central coordinating agency keep records on what the government actually spends for technical assistance and other services procured abroad. This can be combined with the preparation of consolidated annual reports on external assistance sought and received.

There are other central records which can usefully be maintained and made available to appropriate parties by a coordinating unit. Expert reports should be catalogued and a central government-wide file maintained; the coordinating unit should also be responsible for ensuring distribution to interested ministries, libraries, and educational institutions. Up-to-date lists of all foreign experts in the country or expected to arrive should be maintained. Both periodic and consolidated reports of trainees studying abroad should be published, with indications of the subject of study and the length of tour.

5) Evaluating. The test of whether or not the coordinating unit has done its job properly, e.g., has applied the right criteria in checking project proposals, has made sound recommendations on priorities, has selected the best donor for the project, and has negotiated a well-thought-out project agreement, is the success or failure of the project. As a basis for improving performance and also as a service to users of technical assistance, the coordinating agency could undertake a certain amount of evaluation of terminated and continuing projects.

If an evaluation function is assigned to the coordinating unit, it should not, of course, focus exclusively on matters relating to its own performance, but should also measure substantive results, e.g., whether self-sustaining institutions have been created, whether performance is improved in a ministry being assisted, whether pilot-project results are being extended nation-wide, and whether the benefits of the country are commensurate with the resources employed. The type of evaluation that could be performed by a coordinating unit should probably not involve financial audits.

It is always difficult to establish a locus for evaluation responsibility. The unit assigned this function needs to be both close enough to the activity being measured to understand the problems involved, and far enough away from operational involvement to approach the project objectively and with considerable independence.

Organization of the Coordinating Agency

The writer has a strong bias in favor of a central unit for external-assistance coordination, as opposed to a sector approach with each functional ministry or other action agency carrying out all or some of the functions listed in the preceding section. As a practical matter, however, the possibility of a sectoral approach with some sort of arrangement for centralized policy guidance to the action agencies cannot be ignored. What is clearly undesirable is the practice, still prevalent in some countries, of leaving all aspects of programming, negotiating, and administering technical assistance fragmented and dispersed among many agencies.

A recent survey, conducted by the UN, indicated that in only 17 of 58 reporting countries was the coordination authority centralized in one ministry (usually economy, finance, or planning). In the remaining 41, there were interdepartmental committees for coordination, generally situated in the president's or prime minister's office, the ministry of foreign affairs, or the ministries of economy, finance, or planning. These figures can be deceiving. For example, it is not clear how many of these interdepartmental committees had permanent, full-time secretariats attached to them. Where this is the case, one would have a de facto central coordination agency.

An OECD report dealing with 42 countries indicates that there has been an evolutionary process underway in the locale of responsibility for coordination. In most countries, coordinating responsibility initially rested in an interministerial committee with limited secretariat, generally provided by the ministry of foreign affairs. Over time, responsibility has shifted to planning agencies or to the prime minister's office.

Which organizational pattern is most suitable depends on the general structure of government in a particular country and on the nature and magnitude of the external assistance used by the country. Any set-up is workable, provided that enough full-time staff is made available and that policy-level officials give sufficient importance to the complex of functions which this paper has described under the heading of "coordination."

Under any organizational pattern, there will be a need to designate at least one responsible external-assistance coordinator in each

major functional ministry. In countries where coordination of external technical assistance is presently inadequate, the pragmatic first move to improve matters might well be the establishment of these coordinator positions in key ministries. Other steps could follow on a less urgent basis.

Provision also needs to be made for involvement of the academic, scientific, and economic sectors of the nation. External assistance is the concern of more than government agencies.

Consideration should be given to establishing "branch units" within embassies in principal donor capitals. The designation of an external-assistance coordination official in key embassies, and arrangements for direct communication between this man and the central coordinating authority in the recipient-country capital, can enormously facilitate all aspects of the coordination process.

Conclusion

There is no accepted doctrine on the management and coordination of external-development assistance. Each country will have to invent its own solution. There is no "best" solution for everyone. There is, however, a "worst" solution. And that is to do nothing about managing and coordinating external development assistance.

[This is an original article.]

A CASE STUDY IN AID COORDINATION: THAILAND

Eugene Abrams

[Thanks to the Coordinating Group, Thai officials can discuss their development problems with representatives of all aid-giving countries at once. Unlike a consortium, however, the Group concentrates on field problems: coordination of projects, helping new technical assistance experts, etc.]

Over thirty underdeveloped countries are receiving official technical assistance from at least four sources (counting the United Nations and its specialised agencies as one). Over half of these aid-recipient countries have bilateral aid programmes with nine or more industrialised countries, and in three cases the total number of aid suppliers is twelve or more. The case of Thailand is no exception to the growing diversity of the sources of foreign aid. In this country, the member countries of the Development Assistance Committee and other aid suppliers have been making a major attempt to coordinate their aid activities.

Thailand has been receiving technical assistance from a number of Organisation for Economic Cooperation and Development (OECD) countries since 1950, and technical assistance from private organisations has also existed since before that time. Dependent at the outset on assistance from the United States and the United Nations, Thailand has been progressively widening its sources of aid over the years. A total of 12 countries and the

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Colombo Plan had contributed, by 1965, an estimated \$100 million through technical assistance activities.

Over the past ten years, approximately 7,500 Thais have been sent abroad for study and training under officially financed technical assistance programmes, while some 3,000 foreign experts have similarly gone to Thailand. The annual flow of Thai students and trainees for overseas study is reckoned at approximately 700, while experts going to Thailand are calculated at 300 annually, not including some 200 volunteers under official programmes.

It can readily be understood from the foregoing that the coordination of technical assistance efforts is not a luxury but a necessity.

The coordination of external aid, as a minimum, may be defined as the avoidance of duplication of effort and overlapping of activities by those involved in the process. Ideally, coordination is the harmonisation and optimisation of foreign aid within the framework, and contributing to the objectives, of the development plan of the recipient government.

Unfortunately, coordination is no simple task. It requires fairly sophisticated organisational structures, manned by competent civil servants, adjudicating the frequently conflicting needs (and desires) of both aid suppliers and individual ministries within the recipient government. Indeed, in the most highly developed countries today, regardless of ideological approaches, coordination among constituent parts of the government is still a long way from the ideal, despite the increasing use of modern, automated aids. By definition, most underdeveloped countries owe much of their underdevelopment to weaknesses in the areas of organisation and trained manpower. Frequently, too, this lack of organisation and skills is exacerbated by short-term political considerations (by both supplier and recipient) which result in wasteful allocation of scarce resources (foreign and domestic).

The Coordinating Group

The Development Assistance Committee (DAC) of the OECD, aware of the need for coordination in recipient countries and desiring to assist the Thai Government in its efforts to strengthen administration of foreign aid, sponsored a unique experiment through the creation, in early 1963, of a Coordinating Group in Bangkok, Thailand. This group was limited to one aspect of external aid—technical assistance. It was composed of representatives of those DAC countries having representation in Thailand, certain non-DAC governments (Israel, New Zealand, Switzerland), the United Nations, and officials of the Thai Government.

While prior to creation of the Bangkok Group a certain amount of field coordination had been undertaken by the Thai Government within the framework of the Colombo Plan, and by the United Nations and the Southeast Asia Treaty Organization, the creation of the Group focussed attention on the problem of coordination. In the opinion of qualified observers, the Coordinating Group did much to aid the Thai Government in its efforts to "orchestrate" external technical assistance. Thus, the Thai agency dealing with foreign-aid matters, the Department of Technical and Economic Cooperation, has had its ability to cope with coordination issues reinforced through the support of those governments supplying assistance.

At the ambassadorial level, the meetings of the Group have generally been devoted to such broad issues as agreeing on the Group's annual programme of work and—probably most importantly—providing a forum in which the Thai authorities can make a presentation of, for example, a five-year development plan. The Coordinating Group meetings have thus been of considerable value in saving time for both aid supplier and consumer. At the working level, embassy representatives, generally economic or commercial attachés charged with direct responsibility for their countries' aid programmes, have, for example, exchanged technical assistance project information and agreed on the format and substance of the documentation produced under the Group's sponsorship.

At both ambassadorial and working-level meetings, the aid-supplying countries have made presentations to the Group, outlining the nature of their respective technical assistance programmes. This was particularly true at the outset of the Group's activities, when the aid-supplying governments were somewhat unclear regarding the activities of their colleagues. At a more specific level of discussion, experts from the member countries and the United Nations have discussed Thailand's needs in such fields as technical education, feeder roads, and development of the northeast part of the country, to cite a few examples.

Examples of Cooperation

At one working-level meeting, the Group discussed the various methods and criteria employed for the selection of students and trainees to be sent abroad under various scholarship and training schemes. This discussion resulted from the common desire of Group members that the time of foreign students should be used to best advantage and that training should not be wasted by failure to select the most qualified candidates. A number of specific problems were identified and conclusions reached by the Group—including, for example, that the most effective way available to minimise the language problem of Thai students and trainees studying overseas is

for them to absorb as much language training as possible prior to their departure from Thailand. In this way, the very limited time spent abroad would be used to the maximum extent for substantive, as opposed to language, training.

One of the key publications issued by the Group is the annual "Compendium of Technical Assistance"—a document which provides, by sector and supplier, in a standardised format, an up-to-date record of current and previous-year technical assistance projects. Compiled through the cooperation of governments and international organisations participating in the Group's work, the Compendium is another "time-saver," since it frequently can avoid hours, or days, of intensive research by newly arrived technicians who need to know what is being, or has been, done in a specific field of activity. This, as well as other Group publications, provides a collective "summary," or history, of the aid effort in Thailand.

Another noteworthy activity of the Group was a comprehensive study of "Technical Assistance to Southern Thailand." In response to the Thai Government's desire to accelerate economic progress in this region of the country, the Group obtained the broad spectrum of information and judgements required for laying the foundations of a possible special technical assistance programme geared to the economic development effort in the Southern region. Contributions from local and foreign experts were joined into a comprehensive review of certain key sectors having major impact on the economic situation in Southern Thailand—a task which no single country or agency could have easily accomplished by itself.

An unexpected dividend from the Group's activities is the accelerated "orientation" of newly arrived personnel in Thailand. The meetings of the Group, at working level, are fairly informal affairs which bring together those officials engaged in the common aid effort—both aid supplier and recipient—providing an arena for the establishment of the personal contacts so vital to any coordination effort. These contacts, which normally would require many months of assignment to an overseas post, are made in a relatively short period of time, on a common meeting ground.

The success of the Bangkok Coordinating Group, in its passage through the experimental stage, can largely be credited to recognition by the Thai Government that additional measures were required to support its own efforts to coordinate foreign aid and to the fact that the Thai Government was a full and willing participant in the Group's activities.

In the long run, the proof of the effectiveness of the Coordinating Group would be in its ultimate redundancy. The final goal is

complete coordination of external aid by the recipient government. It is probable, however, that the existence of the Group promotes an atmosphere of mutual interest in bilateral assistance programmes; a gap would be left were the Group to cease its functions while foreign aid continued to flow to Thailand.

While Thailand is a country which has a relatively well-developed administrative mechanism, and might be considered by some observers, as a "special case," the example set by the Bangkok Group might well be taken up in other countries. Recent official statements by a number of aid-recipient countries in the Far Eastern region have urged aid-supplying countries to join forces with them in efforts to coordinate the flow of technical assistance.

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INTERMEDIATE TECHNOLOGY

In building new productive facilities or in updating existing ones, everyone agrees that less developed countries should take into account their factor mix—usually the scarcity of capital relative to labor. Most, but not all, writers agree that some technology intermediate between the high capital intensity of the industrialized nations and the high labor intensity of artisan methods is called for. The skeptics argue either that little intermediate technology exists or that it can never be made as efficient as capital-intensive production.

D. R. GADGIL emphasizes the benefits of intermediate technology and the need to evolve one where it does not exist ready-made. Richard FARMER concentrates on problems of imported technologies and adapting them to local conditions. In the transport sector, John MEYER examines the kinds of technology that may suit low-income countries. Anthony BOTTOMLEY surveys the situation of artisans displaced by changing technology and seeks ways of keeping them active in the development effort.

NOTES ON INTERMEDIATE TECHNOLOGY

D. R. Gadgil

[Intermediate technology can be developed by modifying traditional technology, by adapting advanced technology, and, most importantly, by experimentation and research to establish it directly. Because of its importance in spreading industrialization, it is worth a major research effort.]

It is necessary to be clear as to what is meant by intermediate technology and what is the place it occupies in the total development plan, especially in relation to the plan of industrialization. The term "intermediate" denotes a stage somewhere between the "advanced" and the "backward." In India, the "backward" may be identified with the technology of traditional Indian industry, urban and rural, and the "advanced" with the technology of the industrially developed countries of the West. The "intermediate" presumably lies somewhere between the two.

A more concrete concept of the intermediate may be obtained if we attempt to understand why adoption of intermediate technology is considered important in India and how such a technology is expected to evolve or develop.

The need to think in terms of intermediate technology appears to arise primarily from the redundancy of human labour in the country and the inability of the economy to use its labour resources in anything like a full or adequate measure. Important related factors are: the very high

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proportion of those living in rural areas and engaged in agriculture and other primary occupations; the high rate of increase of population; the generally unfavourable land/man ratio; and the desirability, for better organization of agricultural production, of reducing numbers currently employed in agriculture. All these circumstances call for the creation, on a very large scale, of new non-farm employment opportunities. This can be done on a long-term, stable basis only through the establishment of an industrial base of maximum size and strength. Further, in view of the present distribution of the population and the paucity of capital resources, the industrial complex to be built up has to consist of very large numbers of dispersed establishments capable of creating numerous employment opportunities in relation to capital investment.

A subsidiary, but not unimportant, consideration is the fate of the large numbers engaged, even today, in traditional small-scale industries—rural and urban. The total situation makes it urgent that the route of development be so planned that significant numbers of these will not be rendered unemployed before alternative avenues of employment are opened for them and that, as far as possible, the skills and capital equipment now invested in traditional industry will be utilised in plans for development of industry.

Recent experience gives further support to the analysis of requirements set out above. In the first instance, it has been increasingly emphasised that, in underdeveloped economies, the transmission of economic forces is very slow and partial. As a result, the creation of a small number of centres of advanced industry in a country fails to have any significant impact on the bulk of the rural masses and does not initiate a process of transformation which embraces, within any reasonable time-span, the whole of the economy. In addition, it appears that implanting a relatively small element of highly advanced modern business, including industry, often leads to the development of a "dual economy." This implies the semi-permanent existence of two parallel sectors, one characterised by richness of resources, advanced techniques, and economic progress; the other by poverty, backwardness, and stagnation. Exchange relations between these two spheres would then take on the exploitative character which marked the exchange between industrialized metropolitan countries and their predominantly agricultural dependencies in the colonial era. It may thus happen that the two diverge and become antagonised instead of merging and progressing together.

Everything thus points to the desirability, nay urgency, of initiating widespread industrial development in all regions of the country to prevent accentuation of dualistic features within the economy and make for concerted and uniform economic progress. It is necessary

to set this out because the scientists and the technicians must be made fully aware of what is expected out of the adoption of "intermediate technology." Their efforts must be directed towards the selection and development of those procedures and techniques which can serve the given aims.

Its Characteristics

Does the definition of aims and purposes make possible any generalizations as to characteristics of intermediate technology? The broadest generalization one can make is about scale. The smallest scale compatible with efficient production is an obvious desideratum, and a significant step in this direction is expected of all intermediate technology. Negatively, intermediate technology would also be expected to keep investment in fixed capital as low as possible; this would be balanced by there being no special emphasis on economy in inputs of labour, especially of those types which are not scarce in underdeveloped economies. These conditions arise out of relative paucity of capital, the tendency for fixed capital cost per unit of product to rise with diminution of scale, and the redundancy of labour and its low cost. It is in this context that the problem of use of power may also become important.

Because of undeveloped communications and relatively high transport costs, most situations in which intermediate technology is adopted are characterised by cut-up and limited markets. Production units within these would be protected to some extent from outside competition by the transport costs and by any preferences for local products that they are able to establish. The permissible margin in costs per unit of product between advanced and intermediate technology would thus be indicated chiefly by the saving on transport and marketing costs, by any diminution in quality (finishing, packing, etc.) tolerated by the customer in favour of the local product, and by lower labour costs.

An advanced technology is by definition one which makes a more efficient use of resources than a backward one. Therefore, economic development is, in a sense, identified with adoption of more and more advanced technology. However, as indicated above, it may be neither possible nor desirable to adopt the most advanced technology available in many areas of the economy; an effort has to be made to discover the technology appropriate to a particular field in the context of both the general and the specific economic situation. Where this process of adaptation has to be very widespread and appears likely to persist for a long period of time, it is possible to talk in terms of evolution or development of intermediate technology or research and experimentation in its behalf.

Discovering Intermediate Technologies

From the point of view of a nontechnician, the following approaches to the development of intermediate technology appear possible.

1) One approach may be to start with existing techniques in traditional industry and to utilise knowledge of advanced techniques to transform them suitably. Transformation implies retaining some elements in existing equipment, skills, and procedures. If there existed possibilities of a continuous process of transformation so that, starting from the traditional technique, one could, through continuous change, reach the most advanced technology, the problem would be relatively easy. It would reduce itself to that of choosing, for any industry, for a time and place, a particular position on the continuum as the most suitable. In fact, however, such a situation exists in almost no field and each important advance in technology renders previous plant and equipment, for the most part, obsolete. There may, however, exist limited possibilities of improving traditional technologies so as to keep their operations at least partly viable. This process of improvement of traditional technology is extremely important, particularly for that part of the transition in which a holding operation for preventing added technological unemployment appears necessary. It is doubtful, however, whether such modification of traditional techniques would be accepted as resulting in intermediate technology.

2) Another approach would be to start from the end of the most advanced technology and to adapt and adjust so as to meet the requirements of the intermediate. The chief requirements of this, as defined above, are a) small scale and b) change in the proportions of capital and labour inputs. The process appears to have two prominent components. First is the analysis of the different units and processes in the total plant, equipment, and operations. The analysis would initially aim at determining the extent to which the task of adaptation and adjustment of technique could be undertaken relatively independently for separate parts of units. Next, on the basis of a given structure of wage rates and availability of various types of labour, the relative advantages of full or partial adoption of advanced technology for the various separate parts could be calculated. It is this analysis that would uncover possibilities of maximising inputs of low-cost labour and of saving on capital. The second component of the process would be the adjustment of the technique and equipment, to the extent it is to be adopted, to a smaller or the smallest scale compatible with efficient and economic production. In some cases, the process would also involve adjustment to special local circumstances such as type of fuel or power available.

3) A third possible approach may be to conduct experimentation and research in a direct effort to establish intermediate technology. However, for this to be fruitfully undertaken, it would be necessary to define, for the scientist and the technician, the limiting economic circumstances. These are chiefly the scale of operations aimed at, and the relative costs of capital and labour and the scale of their inputs—possible or desirable. Such direct effort at establishing intermediate technology would undoubtedly be conducted against the background of knowledge of advanced technology in the field. However, it could cover a much wider range of possibilities than the effort through the adjustment and adaptation approach.

It should be clear that the establishment of what is called intermediate technology is not a once-for-all process. It is related, on the one hand, to current advance in technology and, on the other, to changing economic circumstances, particularly the widening of markets and change in the relative costs and availabilities of labour and capital. Therefore, the evolution and adoption of any type or scale of intermediate technology has to be considered as essentially a transitional stage, though in the existing situation in India this transitional stage promises to be fairly long drawn out. The continuous changes in the situation to be visualised in the future are mainly a) the adoption in some areas of fully advanced technology and b) the readjustments in intermediate technology itself rendered necessary by the total change in the situation, technological and economic.

Research and Planning

It follows that intermediate technology cannot be considered by itself; it must be constantly and meaningfully related to the total situation. It must be related to both traditional and advanced technology and to the general economic situation, the plans of development, and to special economic conditions within the particular field of application. If one takes the view that today the most important and urgent technological problem confronting India is that of the adaptation to Indian economic circumstances of advanced technology, it is obvious that the bulk of talent and finance in the technological field must be directed towards this effort. The setting up or getting together of a small number of inadequately staffed and financed units for this purpose is altogether insufficient. The main focus of applied research in national laboratories, technical institutes, and large university departments must be on this work. The progress of advanced technology in every field is being adequately pursued in the developed countries; the special adaptations and adjustments required in India are not given, and are not likely to be given, attention in any other country. They must, therefore, obtain the highest priority in our plans. Intermediate technology should become a national concern

and not, as at present, be a neglected field assigned to a small number of specialists, set apart.

Intermediate technology is not only closely connected with all technological work in the country but also, and perhaps even more closely, with all planning effort. No plan of industrialization can be meaningful which does not pay the fullest attention to it. In fact, as pointed out above, the changing circumstances against whose background intermediate technology has to be evolved are shaped by the plans. On the other hand, realistic planning regarding the route and pace of industrialization must be powerfully influenced by the possibilities and achievements in the direction of intermediate technology. There will be a group of activities, e.g., certain basic industries, capital goods industries, public utilities, etc., in relation to which the adoption of intermediate technology may not be considered. For the rest, the effort must be organized in relation to particular aspects and phases of the plan.

I would suggest the evolution of a concept of a "common utilisation plan." By this, I mean taking stock of the total supply of industrial primary and other materials within the country and planning their allocation to various processes of transformation and industrial use. The planning will include both the processing of primary products and their later utilisation. In relation to intermediate technology, the planning of the total utilisation of primary products of agriculture, animal husbandry, forest, etc., whose supplies are available dispersed in rural areas, is specially important. The introduction of the concept of a common utilisation plan is specially important in the case of such commodities as, for example, bamboo and agave fibre, bagasse and molasses, hides and bones.

The evolution of intermediate technology and a proper definition of its position and function would also be facilitated by planning in relation to a whole group of activities, such as building and construction trades. The extent to which the utilisation of local materials and local labour can be maximised while maintaining efficient and economic production through selective adaptation of technological advance must be established in detail in typical local situations. However, certain broad common approaches could also be evolved if intensive attention is given by teams of technicians to this widespread and universally important field of economic activity.

Evolving and adopting intermediate technology is a dynamic process. It should claim the attention, in an important way, of the ablest scientists and technicians in the country. The effort today is both highly inadequate and narrow. The input of scientific and technical talent has been meagre and sectionalised. While, therefore, the move to call together technicians engaged in related effort is

welcome, this will bear fruit only if it is the first step in a much more comprehensive and large-scale plan of action.

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EFFICIENCY PROBLEMS WITH IMPORTED TECHNOLOGIES

Richard N. Farmer

[When technologies are imported, choices are involved at every stage of production—from factory planning to production processes for component parts, to product design. Proper selection requires an understanding of economic variables as well as technical problems.]

All countries of the world have borrowed extensively from each others' technological knowledge at one time or another. Such a process enormously shortens development programs and makes possible technical strides which would otherwise be impossible or quite time-consuming. But technological borrowing has several dangers which should be considered carefully in order to avoid costly mistakes. This paper deals with some of the problems involved in adapting to Middle Eastern conditions the manufacturing processes originally developed in foreign countries.

Few businessmen and government officials are aware of the nature of production problems inherent in the construction and operation of factories of the more advanced types—steel mills, glass factories, petro-chemical plants, and the like. Such activities are left to the technicians, especially on the operating level. Often it seems that economic planners think the technicians can do no wrong; huge investment decisions are accepted without a second thought upon recommendation of engineers who are "supposed to know."

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However, the foreign technicians and engineers are not usually familiar with Middle Eastern economic and social conditions; their training and natural inclinations tend to focus their interests on technical factors. Whatever economic or business knowledge they may have will be based on their own countries, not on that of their hosts. Even local technicians are not likely to have extensive economic knowledge, since technical training seldom includes this factor extensively. The result is that a substantial sphere of knowledge is left untouched.

Determining Production Levels

Production can take place under a variety of technical and economic conditions, but typically there is only a narrow range of economic production possibilities. Any competent production technician in a given field can design a plant which offers lowest-cost production if, and only if, he knows in advance what the level of production is to be. This production level is not determined by the technicians, except by default; it is up to local businessmen, economists, and government officials to compute.

A depressingly familiar sight in the Middle East is the modern, well-equipped plant operating at perhaps 20 or 30 percent of designed capacity. This is not the fault of the designing engineers; rather, it is the natural result of the failure to consider carefully the potential sales of the product being produced. In the absence of carefully thought-out analyses of marketing possibilities, the technicians are forced to make this economic decision themselves. They must, after all, build a plant of some size. In the absence of information, it is likely that the engineers will construct a close copy of plants at home, which, when the small size of most Middle Eastern markets for manufactured goods is considered, will be too large.

Other reasons for overlarge plants may be overoptimistic demand expectations and engineering ignorance. In the former case, the entrepreneurs may simply fail to predict demand accurately, through ignorance of the market, while in the latter, the engineers themselves may not be aware of alternative solutions. An American technician, for example, may not know that an efficient, small-scale plant of the type he is designing has in fact been built in Belgium, and solemnly assures his employers that his design represents the best potentiality. Marketing estimate errors are probably quite common, while such engineering errors are probably relatively rare.

This is not to suggest that every businessman or official should be able to predict precisely what can be sold in a given market—few Western marketing experts could claim such knowledge. But at

least some range estimates of the total market are badly needed in each case, since, in many instances, the plant-design processes and materials used vary drastically with levels of production.

Determining Production Processes

The typical variation is the shift from more highly capitalized and mechanized processes to more labor-intensive processes as outputs decrease. Hence, for example, a component for an electric motor might be die cast in pot-metal alloy, using costly dies and high-pressure molding machines, if outputs were large. If a limited number of motors were to be made, the same parts could be sand cast in aluminum or iron, using simpler equipment and more labor. The precise output at which one process becomes economically superior to another is, in part, a technical question, dealing with die life, labor skills available, materials availability, and the like. In part, it is also a business question, dealing with relative costs of various materials, capital costs as compared to labor costs, capital availability, market growth, and so on. The choice of process here cannot be left either to technicians or to businessmen alone—it must be a joint decision to be correct.

These interrelationships between technology and business can have further important results which can make production costs much higher than necessary. This follows from a consideration of the relative costs of productive factors in the Middle East as compared to such costs in other countries. In Lebanon, for instance, power, capital, and land are expensive relative to Western countries, while labor is cheap. In the United States, power, capital, and land are relatively cheap, while labor is extremely expensive. In both countries, skilled technical and managerial labor is expensive, but such labor is usually obtainable in the United States while it is often scarce or unobtainable in Lebanon. Quite naturally, American productive processes are designed with American factor costs in mind, even when production runs are rather small (and a surprisingly large portion of American industrial output is relatively small-scale). If such an industrial process is transferred to Lebanon without alterations, it is quite likely that the process, though technically sound, will result in intensive utilization of high-cost productive factors. Costs will be higher than would be the case if the engineers realized what economic factors were relevant in the new environment.

Typically, there is more than one way to accomplish any manufacturing process, and production engineers have a wide choice of materials and processes to select from. For example, a radio cabinet can be made of wood, metal, or plastic. If made of wood, it can be of plywood, veneer, or pressed board, cut one at a time or

by the hundreds at once with special equipment. If made of metal, it can be made of steel, brass, or aluminum, stamped by machine or cut by hand, in innumerable ways. If made of plastic, it can be built up one at a time around forms or pressure die cast by the thousands per hour in gigantic die casting machines. In every case, costs differ, not only because labor times and machine requirements vary, but also because power requirements, technical skills, and material costs vary. If an American firm happens to manufacture such radio cabinets using a pressure die casting method with plastics, which yields an output of thousands per day with high capital and power and low labor intensities, it does not follow that a Middle Eastern firm should borrow the process "as is." In fact, it is almost certain that one of the other techniques, utilizing less capital equipment and power and more labor, will be more desirable.

When complex products or services are to be produced, numerous choices in the selection of production processes for components may make production in one developing country different from that in any other country. Hence a radio produced in Lebanon might copy American processes directly in the manufacture of such components as condensers, coils, etc., while other components, such as the cabinet, chassis, and dials might be produced with entirely different techniques. The resulting output—radios—is the same in both cases, but the processes used in Lebanon are unique in combination.

Because of the limited size of the market for most manufactured products in the Middle East, the production problem is often one of building the smallest possible economic plant, which may be smaller than typical modern examples in Europe or the United States. But technical development includes both large- and small-scale production, and it is not always necessary to build plants which are too large. Plants of small productive capacity often require less than a proportionate amount of capital, since much of the work done automatically by machines in large plants may be done semi-automatically or by hand in small-scale firms. The resulting capital saving can be an important asset in capital-short economies.

Determining Product Design

Another problem which arises when products as well as processes are imported is the question of product design. Manufactured items are characteristically designed for home market consumption; if production of the item is transferred to other countries, it does not follow that the product will be best suited for the new producing country. In fact, precisely the reverse may be the case. Products designed in the West may be too complex, too difficult to repair, and even too comfortable for other markets. A case in point is the

American automobile, with its automatic transmission, steering, and springing. Similarly, European radios, with their miniaturized components and superheterodyne circuits, may in fact be overlaborate for the Middle East.

Product design can be anything the engineers choose to make it, within wide limits, but it is the job of the businessmen to indicate just what is wanted. Often the addition of unnecessary complications adds to cost and restricts consumption, as well as absorbing unnecessarily large amounts of scarce skilled labor in the repair and service industries. If the nature of the local market is considered, Middle Eastern businessmen might be able to make substantial contributions to designs of local products that might be superior to imports for a wide range of uses.

Businessmen and planners in the Middle East can make substantial contributions to the development of their economies if they are willing to consider carefully these interrelationships at the production-planning level. Many planners seem to feel that industrialization at any cost will somehow raise the standards of living of the area—it is not generally seen that industrialization can possibly lower living standards if the actual plants and physical facilities are not planned with the needs of the local economies in mind.

If an inefficient plant is built, the first reaction is to apologize with the note that, after all, this is an infant industry. But if the plant is badly conceived and poorly designed in the first place, it may remain an infant for generations. If costs are substantially above world levels, and if imports are excluded by high tariffs or quotas, the result may be a costly drag on the economy, rather than an asset. Already there is some evidence in a few Middle Eastern industries that this may be occurring.

The Need for Production Managers

The continuing development of Middle Eastern industry along dynamic lines requires a special type of skilled labor. Men are needed who are at home both with technical problems and economic variables. It is not enough to build a plant, train local technicians in the existing methods of manufacture, and forget the whole problem for the next twenty years. Continuous efforts must be made both to reduce production costs and to perfect new products for local markets. Unfortunately, the science of production management is in its infancy in the Middle East, and virtually no systematic efforts are being made to develop personnel of this type. One reason for this disinterest is the lack of recognition of the importance of this field in business; the problem of obtaining adequate technical personnel often overshadows the more basic question of what the technical personnel are to do once they are trained.

The lack of adequate production managers can be the most expensive deficiency of all in manufacturing firms. And since it is not immediately apparent that a problem exists, many firms are not aware that their costs could often be reduced substantially if they utilized this type of personnel. This is true not only of private firms, but also of nationalized or government-owned industries. The fact that the government is responsible for management does not solve all problems. One of the gravest errors in planning in underdeveloped countries is the assumption that government ownership and operation somehow automatically solves the problem of obtaining progressive and efficient managements. In fact, public enterprises may present more problems than private on this score, especially if government salaries are low or elaborate bureaucracies of mediocre political hacks tend to sprout. The private firm must either make money or go broke, while inefficient public companies can drift on for decades operating with incredible inefficiency.

It is obvious that technicians are needed if electric motors (or any similar product) are to be made—few businessmen know enough electrical engineering to design such a product. It is not so apparent that several hundred methods of motor manufacture are known and used throughout the world, using a staggering variety of raw materials and machinery. Production costs may vary by as much as a thousand percent between the best and worst methods for a given production situation, with given prices of labor, capital, raw materials, power, land, and various types of machinery. The men who compare prices of alternative factor utilizations and raw materials are just as necessary in the production process as the engineer who plans the detailed design and production process. But the semi-technical manager is seldom utilized in the region. If industry is to achieve its promise, such personnel must be trained and recruited as systematically as other types of skilled managers.

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TRANSPORT TECHNOLOGIES FOR DEVELOPING COUNTRIES

John R. Meyer

[In transport, capital-saving is often the key concept in factor mix. This would argue for largely modern air and rail systems, and good highways. There are possibilities for saving, however, in greater emphasis on used vehicles—trucks, buses, jitneys, cars.]

The problems of picking appropriate factor proportions and a suitably modern or ancient technology for productive operations in less developed countries have been extensively discussed. In abbreviated form, the issue has been stated as that of "labor intensive versus up-to-date technology." It is, of course, conceivable, and in a few cases perhaps even practically possible, to use relatively more labor advantageously with a modern technology. Also, an older piece of capital equipment may not necessarily embody an out-dated technology, may little affect labor requirements, and may be worthy of consideration mainly because of savings in capital cost. Similarly, a useful distinction can be drawn between the problems of choosing between industries with different capital requirements and the problem of choosing between more or less capital-oriented technologies for performing a specific industrial or other economic function. In short, the problem is considerably more complex than choosing between a labor intensive or an up-to-date technology. At a minimum, it would seem appropriate to distinguish between 1) old versus new technologies; 2) old versus new equipment; 3) labor-oriented versus

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capital-oriented industries; and 4) labor-oriented versus capital-oriented technologies for a given industry.

The importance of the third, or "industry choice," issue can easily be exaggerated for countries that are truly in their initial stages of development. For such countries, the planning choices are usually quite limited: almost any conceivable or sensible plan will include some considerable emphasis on development of agriculture, transportation, construction, and public utilities (not to mention education and other social services). Furthermore, if the country is endowed with good natural resources, there are usually compelling reasons for developing such natural resources as a means of earning badly needed foreign exchange. At any rate, most (though by no means all) less developed countries need more transportation capacity if they are to develop economically. The questions, therefore, are not whether to provide more transport, but how much and how.

Finding answers to these questions quite clearly involves both engineering and economics or issues very commonly formulated today under the headings of "operations research" or "systems analyses." Furthermore, a consideration of the engineering and economic details strongly suggests that it is difficult to generalize the findings. In transportation, at least, some support can be found for any and all of the general positions that have previously been assumed on these issues of "labor intensity versus up-to-date technology." Examples and counter-examples abound.

Air Transport

In some applications, very modern technology would indeed seem to be justified—technology in some cases beyond the normal range of existing commercial application in the industrialized countries. Thus, helicopter and vertical (or, more accurately, short-distance) take-off aircraft have very real applicability in certain less developed countries as devices for opening up new territory or uniting geographic areas separated by difficult geographical barriers. The role of any relatively "exotic" technology, however, is likely to be limited to an initial period until more permanent and less costly conventional transportation, usually on the ground, becomes available. There is, of course, nothing startlingly new about this: it has been recognized for some while in Alaska, the Canadian North, and more recently in Algeria, Colombia, Pakistan, and Peru, among other places.

Air transport, in fact, generally provides strong support for those who adhere to the position that a modern technology is best for less developed countries. Air transport of a utilitarian type

often may have a greater relative role to play for passengers. This will be particularly true if the distance between major cities is relatively great or the cities are separated by rugged geographic barriers, as in Colombia, for example.

If a decision has been made to use air transport in some application, it very often is advantageous for a less developed country to use modern jets rather than used piston aircraft. This should be particularly true as the new generation of two-engine jets becomes more available. Because of much higher speed and simple maintenance, which permits more hours of daily utilization, a modern jet normally can produce many more seat miles of transportation for a given dollar of initial investment than older propeller-driven aircraft were able to do when new. Of course, if the propeller craft are available today at heavily depreciated prices, the capital cost advantage may shift to the used propeller plane. However, any capital cost saving on depreciated piston aircraft is likely to be so small as to be offset by other savings. For example, the simpler maintenance of turbine engines is a particular source of appeal and cost reductions in less developed countries. Furthermore, while flight-crew personnel required for aircraft operation are normally available at lower salaries in less developed countries than in Europe or North America, these salaries are still not inconsequential, so that labor-saving remains attractive. In short, jet aircraft appear to be thoroughly dominant in a technological sense. Piston craft will be attractive in less developed countries only if opportunity costs on capital and foreign exchange are extremely high (which, of course, they sometimes can be) or if the route structure has a very low density and many short hops. (Actually, two-engine planes of post-World War II vintage re-equipped with turbo-prop engines—a bit of old and new—can be the most economic in such circumstances.)

Road or Rail

In the important road versus rail choice, by contrast, the adherents of a more labor-intensive approach are likely to receive comfort. However, to the extent trucking is considered the more up-to-date as well as labor-intensive technology, there is some support for both views. Specifically, road transport would seem to have a potentially greater economic role (relative to railroads) in less developed countries than in Europe and North America.

The choice, though, is only very partially explained by the labor inputs required. Any advantage of trucks or buses over railroads in less developed countries largely derives from two factors. First, low volume densities commonly occur on traffic corridors in less developed countries, particularly in South America and Africa, and highway vehicles tend to be more economic than railroads under

such circumstances. Second, railroading generally requires much more centralized and sophisticated management and control than trucking, and the required sophistication is not always found in the less developed countries. As one major consequence, the quality of rail services in some parts of Asia, Africa, and South America can be markedly inferior to the quality of such services available in Europe or North America, while the quality of truck services usually is not. Slow deliveries, of course, increase inventory costs which, in turn, further increase the total relative capital requirements of a rail system.

Needless to say, roads will not supplant all need for railroads in less developed countries. Where heavy volumes of bulk commodities, particularly minerals, are to be moved and no water transportation is available, the railroad almost invariably will be the most economical choice. For these bulk commodities, service considerations usually do not loom large. Furthermore, if the country is very dependent upon imports for petroleum and is short of foreign exchange, railroads can have an attraction over highways. This will be particularly true if the country has coal and its railroads are steam-driven or has considerable hydroelectric power and an electrified rail system. Any foreign exchange advantage of railroads, however, can easily be exaggerated even in circumstances where the country has no indigenous petroleum reserves. It is usually easier to conceive of a country developing import substitution in the supply of vehicles and parts for a highway system than for rail.

Highways

Many intriguing possibilities for factor and technological substitution occur when contemplating different highway transport systems. For example, it is tempting to conclude a priori that American and European highway engineers have been entirely too prone to apply the engineering and specifications developed within the context of North American and European experience to less developed economies. As Kindleberger has aptly put it: "All too frequently it is the technologically culture-bound experts from the developed country, rather than the politicians of the underdeveloped, who need...an...understanding of elementary economics." To be specific, many (including myself) have challenged whether less developed countries really need roads engineered to modern North American standards, say with twelve-foot lanes, six- to ten-inch pavements, six- to ten-foot shoulders, etc.

On closer inspection, however, it would appear that highway engineers, on applying the standards and specifications of Europe and North America to less developed countries, may well have been doing approximately the right thing—albeit sometimes for the wrong

reasons. Whenever volumes achieve a rather nominal level, reasonably good roads seem to be justified in less developed countries for much the same reason as modern airplanes. Good roads permit higher operating speeds, and thus conserve on vehicular capital required per unit of output. Also, they reduce tire wear, vehicular maintenance, and the rate of physical depreciation of the vehicle as well as saving on operating labor. Furthermore, as often noted, good roads reduce road maintenance requirements, and road maintenance can be a somewhat difficult function to organize in some less developed countries.

Used Vehicles

In general, possibilities for achieving economies in highway transportation in less developed countries would seem to lie more with the vehicles than with the highways. Specifically, there has been only limited transfer of used cars, trucks, and buses from Europe and North America to the less developed countries of the world. This contrasts with the rather well-developed tradition of sending almost all used airplanes, ferry boats, ships, and, to a lesser extent, railroad and urban transit equipment.

It would seem logical to transfer automobiles and trucks from high to low labor cost economies at some point in their life when the labor required for maintenance becomes relatively substantial. Most recent improvements in commercial highway vehicles, particularly in the United States, have been mainly aimed at saving labor. Buses, trucks, and autos are examples par excellence of technologies that have had relatively few recent innovations that effectuate important capital savings. Thus they would appear to be particularly suitable for transfer to less developed countries when in a used condition.

For those who would object that vehicular maintenance requires a degree of skill not commonly encountered in less developed countries, it should be observed that many of these countries do an uncommonly good job of such maintenance today. Indeed, a considerable ability to make "creative adaptations" in European and American vehicles to make them more suitable for Asian, African, and South American conditions has been displayed. Of course, spare parts may pose a problem. But as a rule, the manufacture of spare parts should be considerably simpler than manufacture or fabrication of complete automobiles, which many of the larger less developed countries now attempt. At a minimum, specialized rehabilitation of vehicles and manufacture of some spare parts would seem to be considerably more industrially feasible for the smaller of the less developed countries than development of a complete automobile industry. Furthermore, cannibalization of scrapped

vehicles for spare parts would be marginally more attractive in less developed countries than in North America because of lower labor costs; thus, as the less developed countries accumulated a larger stock of vehicles, the spare parts problem would be partially self-correcting. Indeed, by making cannibalization marginally more attractive, some reduction in the number of very old vehicles might be induced, which, in turn, would reduce overall fleet maintenance costs.

Another argument commonly tendered against employment of used highway vehicles in less developed countries is the possibility that a considerable expansion of highway fleets would generate an intolerable increase in petroleum imports in some cases. This would seem to be a general argument against use of any highway vehicles in such countries or an argument for purchase of used European rather than American vehicles. Actually, employment of used rather than new vehicles should have only a very slight effect upon total fuel consumption per unit of output. Furthermore, used vehicles might even reduce fuel needs by reducing average operating speeds and by placing reliance on a fleet with less total horsepower. Similarly, if cars are not manufactured within the country and must be imported, the transport costs per vehicle should not be greatly affected by substituting used for new vehicles and, if anything, might be slightly reduced. The transport costs to be amortized per unit of output would, though, normally increase.

At any rate, an initial assessment of the cost relationships (though one that could use refinement) strongly suggests that, for a given expenditure of foreign exchange on used vehicles a considerably greater total potential volume of transportation output often should be purchasable. The exact extent of the advantage will vary, of course, from one area to another and will depend on the level of ocean freight rates, the existing indigenous capability for vehicle parts manufacture, and the extent to which existing maintenance practices on new vehicles reduce maintenance requirements as vehicles age. Given that a certain level of transport capability is to be achieved, the essential choice is between large initial expenditures of foreign exchange (on new vehicles or new auto manufacturing machinery) with lower vehicular maintenance costs later, or smaller initial outlays of foreign exchange (for used vehicles) but with higher subsequent outlays for maintenance. The high discount rates commonly recommended for evaluating foreign exchange expenditures by the less developed countries imply an advantage for the timing of outlays associated with the second of these two alternatives. Furthermore, to the extent that auto manufacture is marked by more scale economies than parts manufacture and vehicle rehabilitation, some advantage, at least initially, should reside with used vehicles.

"Cars for Peace?"

The question arises, of course, of why this substitution of used for new vehicles has not already occurred on a greater scale if these economies are indeed achievable. The answer would appear to lie in a number of considerations, the most important of which seems to be the nature of excise taxes and import quotas imposed by the less developed countries. In large measure, these policies discriminate against used vehicles. Since a common justification for the quotas and taxes is conservation of foreign exchange, perhaps one way out of the tangle is for the United States to inaugurate a "cars for peace" program parallel to its "food for peace" program. The objective would be to accept payment for used cars in soft currency.

The potential returns from substituting used for new vehicles in less developed countries could be substantial. If we concentrate attention on those countries of South America, Asia, and Africa that would seem to be most in need of help in developing their vehicular capacity and least likely or least inclined to develop internal production of vehicles, we find that the available supply of vehicles is shockingly small. Certainly, it is less than will be required if these countries are to make full or best use of highways now being constructed or planned. More individual highway transport also would seem useful in achieving the expansion of market agriculture now sought in many development plans.

To be specific, the total automobile population of Africa, Asia, and Latin America (exclusive of Communist countries, South Africa, Rhodesia, Israel, Japan, Brazil, Argentina, and Mexico) can be estimated as a little over 3.5 million. The equivalent figure for trucks and buses is approximately 2.0 million. The United States scraps over 6.0 million vehicles per year, of which approximately 800,000 are trucks and buses and somewhat under 1 million more are station wagons that might be expected to have considerable value for commercial transportation in less developed countries. Of course, some four-door sedans might also be useful (as taxis, jitneys, or for light-freight hauling). On a conservative estimate, therefore, today's scrappage rate in the United States would be sufficient to almost double the present stock of commercial vehicles in these less developed countries in one year.

Conclusions

The major point of this paper, however, is not to recommend any specific solution to the transport problems of the less developed countries. Indeed, it seems fairly safe that one cannot recommend one universal panacea that will meet the needs of all of these

countries equally well. A fairly detailed analysis, involving both engineering and economics and incorporating an evaluation of the total system effects, seems required in each case. That detail, moreover, would seem to be a prerequisite to intelligently analyzing the questions so often raised about "labor intensity versus up-to-date technology." Actually, the very alternative of "labor intensive versus up-to-date" may be rather irrelevant in many instances. In transport, "capital saving" rather than "up-to-date" or "labor intensive" would seem to be the key consideration, though even this generalization is subject to significant exceptions. Up-to-date equipment generally will be attractive if recent improvements have led to considerable capital saving per unit of output, as well as labor-saving or service improvements. By contrast, if recent technological change has not induced any significant changes in capital requirements per unit of output, used or otherwise, less up-to-date equipment may be the proper economic choice for a less developed country.

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THE FATE OF THE ARTISAN IN DEVELOPING ECONOMIES

Anthony Bottomley

[As industrialization proceeds, displaced artisans are most likely to be absorbed in export agriculture, artcraft production, and tourist services. The possibility that this "disinherited" class might provide innovators in agriculture and small industry should be explored.]

The artisan producer in underdeveloped countries typically works in a small shop producing shoes, textiles, furniture, and so forth, with the aid of simple tools. His returns are low, his hours long. He constitutes, as a class, a considerable problem when it comes to economic development because he will tend to disappear as factory production takes over. He typically forms a significant proportion of the labour force, and his displacement by factory production is often accompanied by strong political resistance to change.

In poor countries, therefore, as the artisan is thrown out of work, factories may be created in an atmosphere of recrimination as well as of arrested growth, or even declining demand. This may constitute a serious drag on economic development.

Preindustrial countries need to devise an artisan policy which will minimize these disadvantages and will develop to the full those attributes of the artisan community which can contribute to growth.

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In essence, this means finding productive employment for the displaced handicraft worker during the initial period of industrialization. Such openings can best be classified under: 1) manufacturing itself, 2) export agriculture, 3) service activities, and 4) the production of handicrafts for export. In this article, we will discuss each of these possibilities, with illustrations mainly from Ecuador.

Employment in Manufacturing

The growth of manufacturing in a country will have two distinct effects. First, it will help raise the demand for all kinds of domestic goods as the earnings from the more efficient factory-production techniques are distributed among the owners of the factors of production, including labour. Second, it will operate to reduce the demand for domestic output, since one factory worker replaces five or six artisan producers of a particular product. This factory worker may earn more than a single handicraft worker, but he is unlikely to get as much in total as did all of his artisan predecessors. Therefore, unless the owners of other factors of production spend their added factory income on domestic produce, overall demand will fall. Growth will thus atrophy and such surpluses as the factory system possesses will tend to be invested outside the economy. At least this will be true unless industrialization can proceed rapidly on the basis of the export of much of its output, or can derive a sufficient demand from a large population which, although poor, can provide a big enough market for substantial increases in mass production.

When asked, a majority of artisans in Ecuador claimed that they would like to start a small factory, since their livelihood as artisans pure and simple becomes less and less secure. Nevertheless, this desire, even if rendered effective, will do little or nothing to solve a general problem of unemployment among artisans; in fact, it is likely to throw even more of them out of work.

Thus, given that artisan activities typically employ a significant section of an underdeveloped country's work force, it is most important that employment opportunities, in addition to those appearing in manufacturing itself, be created to absorb and sustain the artisan producer. If they are not, the dynamic of factory expansion will tend to falter for lack of demand, reinforced by political resistance to change.

Employment in Agriculture for Export

To put the matter bluntly, a significant proportion of the initial discharges, or of the increases in the size of artisan families where population is growing rapidly, may have to become farmers if they are to play their part in sustaining demand.

Fortunately many, if not most, developing nations have plenty of unused cultivable land onto which disinherited artisans might be absorbed. Ecuador, for example, is reputed to till only 5 percent of her total area (plus another 5 percent in grazing), as against 84 percent which is supposedly cultivable. Fortunately, too, at least as far as Ecuador is concerned, a large proportion of the full-time artisan community has retained some connection with farming, and would appear to be willing to take it up on a full-time basis if given the opportunity. This desire to obtain further work on the land presumably applies even more strongly to those rural handicraft workers who fill in the long periods of agricultural inactivity with work on household manufactures.

Will not the artisans who are encouraged to colonize the extensive margin of cultivation force a larger proportion of the agricultural labour force into subsistence production, thus allowing the economy to atrophy in a partially industrialized form for lack of demand? The answer is that agricultural production does not face the competitive limits on exports which constrict manufacturing in poor countries. The depressing effects of declining demand among artisans can be largely ignored if employment in the production of agricultural exports increases.

However, the problem of finding employment in agriculture is more complicated where land available for development is scarce, and where an expansion in the export of traditional crops is difficult to achieve. The islands of the West Indies provide us with examples of such a dilemma. Can agriculture be expected to absorb the disinherited artisans in these conditions? The answer could be "yes," but the required adjustments will be more difficult than where colonizable land is plentiful.

There are a number of different crops and methods of production which are very labour-intensive indeed, and which might also be expected to enter into the export trade or to provide import replacements. But the problem is that it is always more difficult to get people to change their methods than it is to persuade them to do more of the same. Shifting into new, labour-intensive cropping methods is bound to be more difficult. However, it may just be that the disinherited artisan or independent worker will bring a more flexible outlook to the task than would his purely agricultural counterpart (though this is conjectural).

In these circumstances, a government might stand ready to encourage this disinherited class to engage in a more intensive kind of farming, i. e., by means of massive assistance with land purchase, technical advice, credit extension, and the like. After all, if they are successful, the demonstration effect which they could

exercise on their more traditional-minded neighbours may yield many times the cost of getting the former artisan into the farming business.

However, encouraging the inexperienced to move into farming of any kind is a risky affair, no matter how amenable to change they may be; nations like those of the West Indies may prefer to concentrate on creating job opportunities for disinherited artisans in handicraft production for export, or for the tourist trade.

Employment in Service Activities

By and large, job opportunities in service industries arise out of increases in incomes and employment in basic agricultural and industrial production. They cannot normally be expected to precede such growth.

But there are some exceptions to this rule. Services which are directly applied to production rather than consumption can sometimes be expected to arise in advance of the added output which they are designed to serve. For example, more efficient systems of agricultural credit, efforts to stimulate the sale of fertilizers, or the provision of improved transport and trading facilities would belong to this category.

Everett Hagen has argued at length that a "disinherited" class is most likely to provide the innovators of a developing society, because this class will try at all costs to maintain its former standard of living and position. If we apply Hagen's theories to the plight of the displaced artisan, we might expect that some among them would find a new place in society in trade, finance, or whatever. One encouraging feature in this respect in Ecuador, and no doubt elsewhere, is that the artisan community embraces levels of education well above the average for the country as a whole. Illiteracy is practically unknown among urban artisans there, and rural handicraft workers are, by and large, better informed than their purely agricultural neighbours.

Just what a government's function should be in channelling these anticipated entrepreneurial drives of the artisan in such directions is difficult to say: one can only trot out the clichés which argue for the provision of credit, training in new fields, and so forth. Nevertheless, the liberation of these entrepreneurial forces in a disinherited class may provide a very important stimulus for economic growth, and the issues involved deserve the attention of governments everywhere.

Employment in the Export of Artcrafts

The notion that a significant proportion of an underdeveloped country's work force can be employed in producing handicrafts for export is universally popular. However, the fact that most of the poorer parts of the world do not succeed in providing any significant trade in this area hints that all is not as simple as it may seem.

With artcrafts, their collection, export, and distribution abroad typically constitute the greater proportion of the price of the article when it is finally retailed abroad. These costs decrease sharply per unit as the numbers exported increase.

It is the failure to gather the necessary bulk at various stages prior to export which constitutes much of the real problem with respect to handicraft export. No single exporter or importer is able, by himself, to do much about this. He must persuade the handicraft producers to turn out more goods in a given period of time, and paradoxically, to standardize them to some extent. This means that the typical artisan must employ and train more apprentices before the production of a particular type of artcraft has increased to the required extent. Exporters or importers of artcrafts will have neither the patience nor the capital to sustain such a lengthy operation; a government must intervene.

Some state organization must first buy and store artcrafts of a particular type until sufficient bulk has been gathered to merit a contract with an importer abroad. It must try, through its buying policy, to exercise control over quality, style, and even uniformity in order to make the goods more acceptable in foreign markets. If its initial shipments are successful, it must use whatever methods it can to stimulate rapid increases in the artisan community's output so that orders can regularly be filled in bulk. It might, for example, raise prices in selected lines and for higher qualities if the net returns allow it; it might use propaganda and instruction in order to get the required result.

Once the volume of production has reached the required level in one particular group of artcrafts, the government agency in question can move on to the business of stimulating production in another line in the same way, handing over the trade which it has built up to a cooperative or to the exporters or importers with whom it has dealt. Always, it should try to match the skills of factory-displaced artisans with export outlets in which similar techniques are required. For example, blanket weavers might be encouraged to make tapestries, shoe makers to make leather luggage, and so on. At present, less than 10 percent of Ecuadorian full-time urban artisans are employed in making artcrafts, i. e., goods which might be readily

adaptable to the export trade, such as wood carvings, gold and silver ornaments, or tapestry and rugs.

Capital investment per job in artisan production for export would appear to be comparatively low. In Ecuador, it has been estimated that only \$295 per worker would be needed for marketing and retraining in export production. Further, such expenditures need only be applied to a proportion of the artisan work force before the government can step aside, leaving the demonstration effect to do the rest. Moreover, the actual investment per job among handicraft workers themselves is very low compared with the capital requirements of the factories. In Ecuador it has been estimated that artisans invested only \$63 per job while the outlay per worker in a factory is calculated at \$8,804. Artcraft production for export is therefore very much in accord with the factor endowment of the typical underdeveloped country, where capital is scarce and labour superabundant.

Conclusions

Developing countries need to adapt overall techniques of production to considerations of both supply and demand. Advance will be slow if capital is applied to very few workers and a broadly based growth in demand will thus be denied. The replacement of the artisan by factory production seems inevitable, but ways must be found of keeping these handicraft workers employed.

Avenues for their continued employment in labour-intensive activities can most probably be found in agriculture and in handicraft production for export; also in tourist services in some countries. Jobs in factories and in service activities should ultimately arise if demand can be sustained during the initial period of industrialization when artisans who compete with mass production are losing their livelihood.

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TRADITION

Economic development obviously involves radical change in traditional modes of production, distribution, and, ultimately, consumption. But, will economic change be fostered by radical replacement of all that is old in social, political, and other fields as well? Many think so, but the authors of articles in this section do not. They argue that strong roots of family and village tradition can spur economic change and even that, in transitional situations, economic institutions can be more effective for modernization if they are modified to take account of traditional values.

Below, KHALIF and SHWAYRI deal with the industrial sector—specifically with the family firm in Lebanon; WEINTRAUB and BERNSTEIN are concerned with the agricultural sector—how differences in kinship structure explain economic differences in Israeli villages.

FAMILY FIRMS AND INDUSTRIAL DEVELOPMENT: THE LEBANESE CASE

Samir Khalaf
Emilie Shwayri

[The authors here argue that some of the ills attributed to the traditional extended-family system—nepotism, paternalism, conservatism, etc.—have not held up industrialization in Lebanon and, may, indeed, have exerted a positive effect on it.]

The relationship between traditions and industrial development or economic growth has always been controversial. The prevailing view, stemming from Max Weber, is that advanced societies are characterized by rational and universalistic forms of organization, whereas underdeveloped societies are more traditional and particularistic in nature.

Most of the relevant literature falls in one of two categories. On the one hand, in one sizeable portion of the literature, tradition is seen as a factor inimical to industrial growth. Proponents, particularly economists, argue that traditions in general are always adverse to industrial employment and that a society must do away with such traditional practices and beliefs if any progress and development is to be attained. On the other hand, particularly when traditions, as such, are distinguished from traditionalism as an ideology, traditional norms or practices are treated more functionally as palliatives or stabilizing agents which may prove useful in the solution of current

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economic and industrial problems; in other words, although it can be argued that traditionalism may be incompatible with industrial growth, the second school argues that the same is not true of traditions.

Of all these traditional factors, the extended kinship system and associated attitudes seem to be most widely decried by students of economic development. In fact, many failures and shortcomings of the industrial system are frequently attributed to the continuing dominance of the family firm or family-dominated enterprises. The so-called "patrimonial manager" is often depicted as a person with an inevitable and built-in disposition for nepotistic and paternalistic inclinations. By virtue of his position and loyalty, he is also portrayed as a security-minded conservative who resists change while insisting on retaining a vast amount of authority in his own hands. It is argued that these and other derivative consequences of the extended kinship system render family firms incompatible with the logic of industrialization as a rational process.

This paper supports the contrary point of view—that traditional norms in general, and family firms in particular, may support rather than subvert industrial growth. This is particularly so of a society in transition.

Concomitant with the deep and continuous change underlying its social structure, Lebanon is in the throes of industrialization. Desirable as it may seem as a goal, industrial development remains a painful process because it entails a considerable degree of disruption and change in the socio-economic institutions. In such times of flux and uncertainty, one can find some refuge and security in certain traditional forms of social organization. Such refuge need not be interpreted as a fatalistic flight from the disquieting demands of a complex and competitive world. Neither should it be taken as a fatuous gesture to glorify the sacred traditions of the past for their own sake. Rather, traditional forms are effective in coping with some urgent industrial problems.

In the absence of other agencies, such as a powerful and organized labor movement and a more consistent policy of government control, family firms have performed some vital functions. Indeed, as they are presently functioning in Lebanon, they do not appear to be incompatible with the demands of industrialization. Instead, they combine the virtues of the two worlds: some of the secure and tested traditions of the past along with the rational and secular requirements of a contemporary society. Insofar as they have been able to reconcile these two tendencies, they have remained adaptable and viable organizations. The history of Lebanon's industrial development, together with the results of the preliminary study summarized here, provide ample proof of this contention.

The Evidence

The bulk of the evidence for this paper is derived from an extensive case study of 10 family firms. [Emilie Shwayri, "Family Firms as a Factor in Lebanon's Industrial Growth," M. A. Dissertation, American University of Beirut, June 1964] Apart from being the largest, both in terms of size and capital invested, those selected are among the most important industries in Lebanon. They represent the following industrial establishments: food processing, textiles, tanning, leather articles, wooden and metal furniture, soap, paints and polishes, metal-working, and water pumps. In order to assess the practices and attitudes of patrimonial managers with respect to the operation of their organizations, the survey explored the following areas: history of the firms, ideologies of top management, organizational structure, delegation of authority, personnel policies, and the performance of managerial functions such as planning, organization, staffing, directing, and controlling.

This essay will confine itself to some of the main charges made against family firms. Four such charges are discussed below.

Nepotism

The extended family's control of an enterprise, it is argued, enables less competent members of the family to hold managerial positions for which their training and ability would not otherwise qualify them. Family loyalty and obligations take precedence over other loyalties and obligations, with the result that kinship ties rather than competence and training constitute the principal avenue to key managerial positions. In short, it is maintained that family firms in general fail to conform to two vital requirements of industrialization as a rational process, namely, functional specificity and universalistic criteria.

At first glance, it would appear that Lebanese family firms are conducive to nepotism. Family loyalty is still a predominant characteristic of the culture. Economically speaking, the extended family is often regarded as the basic social unit. Since the average business unit is relatively small, industry is often regarded as a purely family affair.

It is argued that this narrow conception of business as a family affair has led many employers to "view their firms in much the same way as they view their private home and estate. . . . The firm is the source of the family income and prestige, to be managed, inherited, or sold in the interests of the family alone." [Arthur E. Mills, "Economic Change in Lebanon," Middle East Economic Papers, 1956] Moreover, the focal position that the family occupies in Lebanese

culture, and its unshaken internal loyalty, are also seen to be reflected in the lack of any broader sense of social responsibility among many industrialists.

Plausible as these charges may appear, we found no evidence to warrant their support. True, the administration of the enterprise under study is entirely in the hands of the patrimonial group, and no outside employee possesses decision-making power in the strict meaning of the term. But to hold this as prima facie evidence of nepotism, and to associate this nepotism with inefficiency, is an entirely different matter. A few considerations to the contrary may be advanced here.

First, Lebanon has a critical shortage of people with professional and managerial skills who can occupy positions of authority without ownership. In fact, the organizational elite and the supervisory talent required for industrialization are virtually absent, particularly at the levels of middle management. Under such conditions, and in view of their training and experience, patrimonial managers should not perhaps be blamed for drawing upon their own resources for the needed talent and skills. Furthermore, they have a genuine belief, sustained by long experience, that competent employees who are also sparked by a sense of kinship loyalty seem to have a higher degree of involvement in the affairs of the enterprise.

Second, among the basic value-orientations of Lebanese society is the presupposition that the environment is hostile, that people outside one's family or group are generally antagonistic and may take advantage of one at any time. This, more than anything else, has made the outsider a suspect and has intensified rivalries and factions at all levels of the social structure. Under such circumstances, it is little wonder that patrimonial managers should be predisposed to avoid placing "outsiders" in key positions. Indeed, it would be foolhardy to do so, particularly when the relatives happen to possess the needed skills and experience.

Finally, Lebanese family firms are not yet large enough to necessitate the employment of outsiders in managerial positions. Typically, the members of the patrimonial group are adequate in number and can effectively share among themselves the responsibilities of managing the firm. Furthermore, they do recognize that the process of dividing responsibilities among themselves cannot continue indefinitely and that, as the firm grows beyond a certain point, the hiring of outsiders to fill managerial positions becomes a vital and inevitable requirement. Performance is slowly becoming the prevailing criterion for reward and promotion.

No one denies that ascriptive and particularistic considerations may impose serious limitations on the effective functioning of industrial organizations, but nepotism as such need not always betray the rational and universalistic principles of utilizing productive resources. Indeed, in societies "where trained skills are scarce and the sons of the wealthy have much of the training, nepotism may be relatively costless." [George B. Baldwin, Industrial Growth in South India, Glencoe, Ill., Free Press, 1959] Furthermore, particularly at this stage of Lebanon's industrialization, the family has proven to be a source not only of talent and faithful service, but also of initial capital for investment. Everett E. Hagen might as well have been talking about Lebanon when he said:

"Where one can neither trust a stranger or an acquaintance as a business associate, nor persuade him to lend one money, then the extended family may be a necessary source of capital and a necessary bond between business associates. Its abolition would not modernize the society; in the circumstances it would merely paralyze large-scale relationships." ["The Process of Economic Development," Economic Development and Cultural Change, April 1957]

Centralization of Authority

Other critics have been more alarmed by the extent to which family loyalty tends to limit the process of delegation of authority in industrial organizations. Since he is engrossed in the effort of remaining the master of his own house, the patrimonial manager is often depicted as an autocratic despot who monopolizes and jealously guards a sizeable amount of authority and the decision-making prerogatives. Furthermore, it is argued, he tends to think of this authority in terms of personal power, rather than as functions inherent in an office. Given this conception of an enterprise, any division of responsibility may then not only undermine the sovereign authority of the patrimonial group, but may also dilute the family's prestige.

In general, the patrimonial manager is seen as uncompromising and suspicious of his subordinates, but one who nevertheless persistently complains that people in his organization lack initiative, imagination, or just plain common sense. He delegates too little, does too much, and thus has scarcely any time left for effective and creative management.

The consequences of such overcentralization of authority are alleged to be: a marked absence of precise job definitions and classification; organizational gaps between the few in command on top and the ranks of the lower echelons, particularly middle-management

and first-line supervisors; and a virtual extinction of the foreman as a managerial resource. The cumulative effect of all these, among others, is to discourage the growth and expansion of the enterprise. Opportunities for younger executives are limited, incentives are stifled, and initiative is drained.

That Lebanese industrialists in general should subscribe to many of these practices is not surprising. As long as authoritarianism and the presupposition of hostility remain persistent cultural themes, it is natural to expect all managers—patrimonial, salaried, or otherwise—to be inimical to delegation of authority in both theory and practice. That such attitudes and practices are not something inherent in, or peculiar to, family firms, is also suggested by a preliminary comparison of the 10 firms under study with a broader sample of Lebanese industrialists. Neither group is much predisposed to delegation of authority, but the heads of the firms in the patrimonial group do, at least, delegate and/or share part of their managerial responsibility with other members of the family.

As has been suggested earlier, authority in Lebanese family firms does not appear to be exclusively concentrated in the hands of one single individual, but is shared by the members of the patrimonial group, which may involve between five and ten persons. The Lebanese patrimonial manager at least favors the "horizontal" sharing of authority at the top. In one sense, major authority is concentrated at the top, and even the most routine decisions are often pushed up from below because of reluctance of subordinates to assume responsibility. In another, there is apt to be rather wide participation in decision making. Top executives (members of the patrimonial group) seldom take individual responsibility. They act only after thorough discussion and examination of alternatives by the group. Such a state of affairs is akin to that prevailing in Japan—another instance where centralization of authority has not apparently been disfunctional.

It should also be noted that, even though there is no vertical delegation of authority, subordinates are generally allowed to "speak their minds" and encouraged to express their opinions on matters where their knowledge and experience may be appropriately put to use. Moreover, and contrary to what is frequently charged, Lebanese patrimonial managers appear to utilize the services of the foreman as a link between managers and workers. Instead of being demoted into the ranks of labor, he is correctly perceived as the "man in the middle."

The Lebanese patrimonial manager does not believe that he is born to rule his enterprise. Rather, he justifies the legitimacy of his authority primarily on the basis of his functions in the organization,

and to a lesser extent by virtue of his ownership or property rights. Firmly believing that property creates a sense of responsibility, he may still sustain some skepticism regarding the earnestness and motivation of salaried employees. But such attitudes have not been uncommon in the early stages of industrialization of even the most developed economies, and there is no reason to believe that they should act as serious deterrents to industrial growth in Lebanon. With time, and as the inevitable process of secularization takes root in the society, patrimonial managers are likely to acquire more rational theories of motivation and consequently modify their present attitudes toward delegations of authority.

Finally, the charge that centralization of authority hinders the growth of an enterprise must also be qualified. The Lebanese patrimonial manager is more than eager to expand his business, provided market conditions are favorable. In fact, in all 10 firms studied, the number of employees has been increasing. From an average of 46 employees at founding, the family firms have reached an average of 244.

Paternalism

Another traditional feature often considered in discussions of the rate of industrial growth in Lebanon has been the persistence of relatively small, tightly controlled enterprises and the survival of a good deal of paternalism in employer-employee relationships. Paternalism in industry has its roots in the feudalistic tradition where the employer expresses his responsibility toward the worker by providing him with welfare services and social benefits. In return, the workers is to express his obligation by being loyal and productive. In short, the image of the "industrial father" takes the place of the head of the family or tribe. Of all forms of managerial organization, patrimonial management is, not surprisingly, more inclined to exhibit paternalistic features.

In Lebanon, paternalism is not characterized by a profusion of social services. Nevertheless, a good share of employer-employee relationships are still characterized by a quasi-familiar paternalism, patterned after the master-serf mentality. The patrimonial groups usually maintain personal relationships with their employees, know their names and their families, and rely upon such relationships to ensure the discipline and work performance required in the factory.

The survival of such paternalism, it is often charged, has posed many obstacles to industrial development. Among other things, it restricts mobility and incentives and promotes a lack of venturesomeness among subordinates.

That these features have been, in some form or another, a liability to the industrial system in Lebanon cannot be questioned. However, the timidity of the work force and the weakness of the labor movement reflect some underlying socio-economic conditions which have little or no bearing on the nature of patrimonial management. The persistent surplus in the labor supply which Lebanese industry has faced accounts for a good deal of the prevailing apathy and the weak bargaining position of labor. The paternalism of the employer may in fact be a reaction to, and not a cause of, such conditions.

Indeed, an industrialist sparked by a spirit of paternalism may, for whatever motive, offer his workers certain welfare benefits and social services which other agencies in society have so far failed to provide. With a minimum of government intervention in the industrial system, a weak and ineffective labor movement, and the absence of collective bargaining and other means of labor negotiation, the paternalistic employer may be one of the few remaining agents who can still provide some of the benefits which the worker fails to derive elsewhere. In addition to such material benefits, paternalism "often serves to smooth the major dislocations which an industrial way of life forces on the newly recruited workers." [Kerr, et al., Industrialism and Industrial Man, Harvard University Press, 1960]

Naturally, this state of affairs cannot go on indefinitely. Management faced with an increasing pace of industrialization cannot possibly sustain its paternalism. Various pressures, in the form of more militant labor organization or government labor legislation, may be brought to bear upon it. None of these pressures, however, which in highly industrialized societies have been exerted upon employers to force them to relinquish some of their authoritarian and paternalistic practices for a more constitutional approach, has taken any substantial root in Lebanon. The country is still at too early a stage for such forces to have gathered momentum.

Such considerations are often overlooked by those who persist in decrying the evils of paternalism. Brought up under strict paternal authority, Lebanese workers may not bitterly resent the paternalistic approach to which they are culturally attuned. There is, at least, a relatively low incidence of industrial unrest and labor protest in these firms. Rather than being resented as an intruder who meddles with the private lives of his employees, as perhaps has been the experience in some advanced societies, the paternalistic employer in Lebanon still plays the role of the benevolent provider.

Conservatism

That conservatism should be considered a characteristic of family firms is not surprising, in the light of what has been said thus far. The patrimonial manager is seen as a person motivated by the desire to assure a regular income and protect the family's status and prestige. In short, he is depicted as the type who has an almost compulsive aversion to innovation and change. Driven by excessive prudence and an overwhelming concern with security, he is constantly "playing it safe." The cumulative effect of such attitudes, among other things, is to create rigid and timid enterprises drained of any of the dynamic and venturesome attributes required for industrial take-off and sustained growth.

The Lebanese patrimonial manager does not appear to fit into this mold. When asked, for example, what they conceive their major function to be, the respondents rated such things as "following up the developments taking place in the West" and "studying market conditions" as the most important. "We must not only keep ourselves informed about the machines already existing in Europe and the techniques being used," said one of the respondents, "but we must also be aware of the new technical advances." Furthermore, far from learning the business by sitting at the desk and listening to what his father says, the Lebanese patrimonial manager gets his training by traveling abroad. In fact, all ten respondents had travelled extensively within and outside the Arab world.

All in all, those in the patrimonial group, perhaps like the Lebanese in general, display a remarkable facility and readiness to abandon old ways and emulate the new. Indeed, in all fields but marketing, Lebanese family enterprises seem to be animated by the same propensity for adaptive innovation which played an important part in Japan's economic transformation from an agrarian to an industrial society.

Concluding Remarks

It is true that the limited nature of the case studies does not allow us to generalize. Further and more extensive research is needed before we can arrive at more emphatic assertions. The evidence presented thus far, however, tempts the writers to suggest that, under certain socio-economic conditions or at certain stages of industrial growth, the relationship between traditional norms and industrial growth may be mutually reinforcing. Given some of the salient features of the industrial and socio-economic environment in Lebanon, family firms have exerted a positive effect on industrialization.

The traditional norms of the Lebanese culture have not been swept aside by industrialization. Instead, the culture has assimilated and reinforced a good part of the demands of industrialization. For this reason perhaps, many of the managerial norms and practices which are rapidly becoming obsolete in advanced societies are still effective and functional in Lebanon.

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SOCIAL STRUCTURE AND MODERNIZATION: A COMPARATIVE STUDY OF TWO VILLAGES

D. Weintraub
F. Bernstein

[The very different history of two similarly endowed villages points up the critical importance of social cohesion in permitting economic development. In this case, cohesion was a result of the close blood ties and similar experiences of one set of villagers prior to settlement in Israel.]

This study analyzes social factors responsible for striking differences in the development and modernization of two neighboring villages in the mountain district near Jerusalem. They have practically identical farming and marketing conditions, population, and extension services. Because they are similar in these characteristics, to which variability in development in commonly traced, a laboratory situation is created, as it were, to facilitate the systematic examination of the effect of structural social factors on development. As will be seen, differences in historical background and kinship structure are suggested as critical factors in making for modernization in this case.

Background and Population of the Villages

Agur and Zakharya are both moshavim—that is, smallholders' cooperative settlements, populated by new immigrants. Agur has 43 households, Zakharya 70. Both are situated in the Jerusalem area, about 10 miles apart, with similar climate,

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topography, soil, market situation, and facilities. Both have economies based on the mixed, mountain type of agriculture comprising the same branches of production. In both villages, each settler was allocated a similar area of land (with possibilities for expansion through use of reserve or renting additional land from neighbors) and quantity of water for irrigation. The two moshavim were established at the same time and settled by immigrants from Kurdistan—people with one culture of origin, a similar occupational and educational background, and a like motivation to immigrate to Israel, as well as similar attitudes toward agriculture and rural life. This essentially common heritage is also reflected in the similar demographic pattern of the two groups as regards marriage, fertility, and mortality. They are also alike in respect to distribution of manpower and age composition.

The main difference in background is that the settlers in Agur came to Israel in loose groups from diverse regions in Turkey and Iraq, while those in Zakharya came from only one region in Iraq and have a greater proportion of close blood ties among the kinship groups that make up the village. These differences, and their relation to development of the villages in Israel, will be examined more closely later, after the differences in development levels between the two villages have been outlined.

Differences in Economic, Political, and Social Development

In Israel today, the differences between the villages are striking.

Economic development. While, in Agur, the maximum cultivated area is 14 dunams [1 Israeli dunam = 0.1 hectare] with two-thirds of the farms not exceeding 10, in Zakharya most farms were far larger, two-thirds of the households cultivating an area of 20 to 24 dunams. The average number of yearly standard workdays is almost twice as large in Zakharya as in Agur.

Farmers' proficiency was graded by a panel of experts on a scale from 0 to 100, using generally established norms relating to timing, quantity, and quality. While the average level of skill in Agur was 31, in Zakharya it was 55. Furthermore, whereas in Agur only 10 percent of the population achieved a score higher than 40, and none exceeded 53, in Zakharya over half the population scored more than 50, the highest score being over 70.

While in Agur not a single family was found whose income from the farm was more than 2,000 Israeli pounds (\$667) per year, in Zakharya 45 percent of the families had such an income. In Agur, 83 percent of the families declared an overall income of less than 1.£2,000; in Zakharya, only 34 percent earned that little.

Political development. A similar political contrast exists between the two villages. It is illustrated here, for brevity's sake, by a political institution central to the moshav—the village council. This is the central administrative body, responsible for all municipal and cooperative services, and is consequently the focal point of political struggle in the village.

In Agur, the council is elected by a small majority controlled by one of the two political cliques or by coalitions between two kinship groups. There is no previous exchange of ideas and no attempt at adjustment and accommodation. The ballot is obviously not personal but collective. Because of frequent shifts in the allegiance of the "floating" voters not closely related to either kinship group, no political group can stand firm long enough to plan and implement a long-term schedule of activities. The council is neither capable of proper municipal and economic management nor oriented to the welfare of the village as a whole, since the candidates are nominated on the basis of kinship seniority rather than on the basis of ability. The council tends primarily to advance the interests of the in-group; in general, political office is seen in terms of exercising particularistic obligations and of reinforcing the traditional status of kinship elders. At one point, the situation became so serious that outside personnel had to be appointed by the Land Settlement Department to many of the decision-making positions on the village council. This arrangement, however, inevitably minimizes the participation of the settlers in government.

In Zakharya, the five-man council has for several years embodied an adjustment and a reconciliation of the various political interests, including two members from the largest kinship network and one each from three other groups. In this way, four of the six groups representing over 80 percent of the electorate are "in." The universalistic orientation of the council is also significant: once elected, members rise above kinship obligations and act to promote the welfare of the village as a whole.

This growth of universalistic orientation has been accompanied by changes in the criteria for election to the Zakharya council and, consequently, in its composition. Kinship groups have begun to nominate those of their members objectively best qualified to manage village affairs. Initially, younger members were entrusted with specialized functions below the decision-making level. Having proved themselves in those fields, they were allowed to assume positions of greater responsibility (such as the secretaryship of the village), while the elders retained the headship of the council and the majority of the seats. Gradually the younger generation has assumed a

greater proportion of the formal offices, while the traditional leaders have kept their prestige within the kinship group, providing still-needed legitimation of economic and political activities, and preserving traditional values. The inevitable friction accompanying these changes has been minimized by the separation of public and private spheres, the solidarity of the family, the deference accorded to parents and elders, and the acceptance of religious obligations on household and community levels.

Social development. Agur and Zakharya also differ considerably in the extent of their social modernization. These differences are reflected in the contrasting friendship networks of Agur and Zakharya, which were arrived at with the help of a questionnaire in which each settler was asked to name his two best friends.

In Agur, there are two main groups in which the basic political divisions and two "coalitions" of kinship networks largely coincide. Only four persons deviate from the political group in their choice of friends. This connection between friendship- and kinship-based political commitment reflects a congealing of the traditional structure and constitutes a further obstacle to unity and integration in the village. Any change in the political setup must disrupt the friendship framework and, conversely, every personal quarrel becomes a political crisis.

In Zakharya, on the other hand, there are seven friendship groups unrelated to any other groupings. There is no significant connection between the kinship frameworks (and the political units identical with them) and friendship; members of the same kinship network belong to different friendship groups; and every friendship group includes individuals from many kinship units.

The differences in economic development and in political and social modernization between the two villages—seen against the uniformity of background and setting described earlier, and forming within the short span of ten years—seem nothing short of amazing. Part of the explanation may no doubt be found in the mutual reinforcement and cumulative nature of the changes. However, feedback mechanisms do not account for the initial point of divergence, nor are they automatically maintained.

It is suggested that it was the different kinship structure of Zakharya, reinforced by a more homogeneous group composition, which provided this basis and has since served as the backbone of development and modernization.

The Kinship Structure of Agur and Zakharya

In the "traditional" Jewish community—to which the Kurdish Jews belonged—the family unit determines social interaction and division of labor. This pattern was characterized by a very strong attachment to kinship and territorial groups, by limitation of social interaction to these groups, and by an unwillingness to "cooperate" with outsiders. The basic framework is the hamula, that is, the Mediterranean patrilineal and patrilocal lineage.

In the countries of origin, the members of the hamula usually formed a neighborhood group (sometimes constituting an entire village), membership implying an obligation to give economic help, hospitality, political support, and general protection to other members. The ties of the hamula did not specify any communal or cooperative arrangements in production, the individual household (usually comprising the extended family) serving as the unit of production and consumption, as well as of socialization. Status, however, was determined primarily by the importance of the hamula one belonged to and by one's position within it. The hamula was usually endogamous and often had a special prayer version and place of worship, thus engendering intense loyalty that overrode affiliation to any other group.

Familism as a value and as a pattern of social organization not only continued to exist after immigration to Israel, fitting "naturally" into the small community pattern, but was even reinforced by the crisis of migration and by the greater scope of activity in the moshav. The structural integrity of the kinship units, however, was sometimes impaired during the process of settlement. As a result, the original criterion of membership—direct patrilineal descent—became blurred, and quasi-humulas, representing the familistic principle but admitting ties by marriage and territorial cliques, emerged.

Agur and Zakharya, it has been found, differ considerably in this respect, the one having a more organic kinship structure, the other a more "simulated" or modified one. For example, the kinship network in Zakharya is denser than in Agur; 76 percent of the relationships are close blood ties, as against only 49 percent in Agur. In Zakharya, five out of six groups have a hard core of close blood ties which are more numerous than distant ties, in contrast to Agur, with only one out of four. Historic memory, as expressed in the number of generations mentioned and how far names of lineal ancestors could be remembered, was much stronger—by as much as 30 percent—in Zakharya.

With regard to the relative size of the kinship groups, Agur is characterized by four roughly equal groups, while Zakharya has

two units that are appreciably larger than the others and which constitute a natural nucleus of authority around which the village can stabilize.

These differences in the "organic" continuity of the kinship networks have immediate consequences for political organization. In neither moshav are divisions based on ideology, policy, or economic interests; the political struggle is concerned, rather, with power and prestige. However, the extent and nature of this correspondence differs significantly in the two communities. Ties which are not "dense" or "organic" do not constitute a politically binding criterion.

In Agur there are, as has been mentioned above, two political units, each based on a coalition of two closely blood-related kinship groups. However, the households attached by marriage or by distant relationship are a "floating" element, courted by both sides. In Zakharya, the identity between political affiliation and kinship is complete, each of the six networks constituting a political unit which includes both close and distant kinship ties and is capable of holding marginal members.

On the face of it, the situation in Agur would seem to be one of greater flexibility, with the "floating" vote preventing a hardening of the political structure along rigid ascriptive lines. In reality, however, the "unattached" households are incapable of giving their loyalty to one group for a prolonged period of time, and they change sides frequently. Of 22 adults remotely related to their kinship networks, 12 crossed family lines in their political choices during the year of research. The result is that political stability cannot be achieved, and there is no basis for concerted action at the community level.

The apparent paradox of the situation lies in the fact that the strong kinship units of Zakharya, while upholding traditional organization, do not strengthen resistance to innovation and change. In fact, it was the integrated, kinship-imbedded political system that produced more modern political behavior as well as greater social differentiation.

This process of association between traditional kinship structure and innovation seems to have developed mainly through two interrelated mechanisms.

- 1) The existence of conditions facilitating the emergence of young leadership within the traditional framework. It appears that the most vocal and gifted member of the younger generation in Zakharya was strategically located within the central extended

family in the largest hamula. By acting within the kinship framework, by accepting its authority and drawing upon its legitimation, and by enhancing its status through successful performance of his function, he succeeded in gaining the support of the hamula for his election as the first young chairman of the council. Since then, his skill and universalistic orientation have gained him the support of other kinship groups and a considerable measure of personal popularity; and this has, in turn, reinforced his position within his kinship unit. Undoubtedly a part was played here by the coincidence of personal qualities, both professional and charismatic. However, these qualities could only exert their influence in specific structural conditions, which enabled secondary innovating elites to succeed through securing the support of central traditional groups.

This particular blend of kinship-imbedded political organization, on the one hand, and of achievement and universalism in elite selection and government, on the other, has indeed been of crucial importance for a balanced process of modernization in the village. It has prevented the emergence of new factions and demands, which would as yet be beyond the capacity of the new elite to meet and absorb.

2) Differential toleration of change. It would seem that, in contrast to Agur, in the "dense" kinship networks of Zakharya an assured core of genuine loyalty allows the group to "unfreeze" or release part of the commitments due to it, while the lack of such a core engenders resistance to all innovation in Agur.

The "organic" kinship structure of Zakharya has served as the basis of change and has been its mainstay and safety valve.

We must now examine briefly some of the historical factors responsible for the crystallization of a different kinship structure and composition in the two villages.

The Background of the Story: Some Earlier Social Processes

The settlers of Zakharya, before coming to Israel, already constituted a group—though a loose one—with a mutual acquaintance, common experience, and common purpose. Although the various hamulas of this group had lived in different localities, they all came from the same district in Iraq, were involved in the abortive rebellion of 1945, and fled the area to escape the persecutions of the local sheiks. On hearing about the establishment of the State of Israel, they assembled in Baghdad, clustered there around the leading hamulas for nine months, and were then flown together to Israel.

The present settlers of Agur, on the other hand, came from different regions, had no previous contacts, and were thrown together

by chance. They included 32 families from diverse districts of Iraqi Kurdistan and a large minority of 11 Turkish Kurdish families. Moreover, it was the minority group that was integrated, while the majority was divided against itself.

In Israel, it was pure chance that a relatively homogeneous and cohesive nucleus composed of "organic" networks was sent to Zakharya and that Agur, by contrast, was filled up piecemeal by Turkish and Iraqi Kurds as well as some Moroccans (who later left). The situation created in Agur actually suited, initially, the official "melting pot" policy of absorption, which aimed at a quick integration of groups of different origin. Later, because of social crises in many villages, this policy was abandoned. For existing villages, however, it was by then too late, short of a complete upheaval.

In a situation like this, nothing could be done in Agur by the settlers themselves. No one group could be prevailed upon to leave in order to create a greater political stability, and there was no natural nucleus around which to reorganize.

Not so in Zakharya, where a similar situation could be resolved. Here, too, the first group of settlers did not fill all the farm units in the village, and the Settling Agency brought in "reinforcements." The newcomers, composed of one hamula and fringers, were strangers to the earlier settlers and did not integrate within the village. There was constant bickering, and the presence of a "militant" minority which did not accept the "rules of the game" proved highly disruptive. This situation culminated in an all-round fight—in which firearms were used—following which most of the "active" intruders left the moshav. The vacant farms were then reallocated to sons of farmers (the population being strong enough and large enough to resist the introduction of another batch of new settlers), and the social fabric was reintegrated.

It seems, then, that the following historical factors favored Zakharya in comparison with Agur: 1) previous acquaintance and interaction abroad; 2) some signs of early organization around dominant and organic groups; and 3) selection by rejection and ejection during settlement.

General Remarks

Before attempting to generalize from this analysis, a few remarks on the specific features of rural development in Israel must be made. Four major characteristics seem to distinguish the situation here from that in other developing countries:

- 1) Rural development in Israel is carried out within a relatively modern and stable institutional framework.

2) The rural sector has never been isolated from, or dominated by, the urban one. On the contrary, rural elites have consistently occupied a central position regarding the political, economic, and value systems of the country.

3) Owing to historical circumstances, Israel is able to invest relatively more capital and skilled manpower in rural development than can most other developing countries.

4) The traditional communities, undergoing a process of change in Israel, are composed of immigrants uprooted from their native surroundings and resettled in preplanned, already established villages. Thus they lack a background of long territorial continuity and have less hardened and "interlocked" elements. This, while possibly affecting the integration of the group, may also lower resistance to change.

For these reasons, the rate of change and development may be quicker in Israel; it is doubtful whether many countries could duplicate the case of Zakharya, where, within the span of half a generation, a traditionally oriented group accepted modern technology and farming methods as well as some significant elements of social and political modernization.

In spite of these reservations, however, internal problems of developing communities in Israel seem to be of an essentially general nature; and thus some general conclusions may be drawn from the material presented here.

1) Our data lend support to the view that the "opposing" principles of traditionalism and modernity are not as mutually exclusive as has often been assumed, and that not only can they coexist under certain conditions, but that they may even reinforce one another. Traditional patterns were thus found to be capable of facilitating modernization through social integration, regulation of mobility, and the mobilization of resources for new policies and goals. Of crucial importance in this respect is the demonstration that a traditional "lag"—or structural discrepancy in development—may be functional for the efficiency of the system and its continued orderly change.

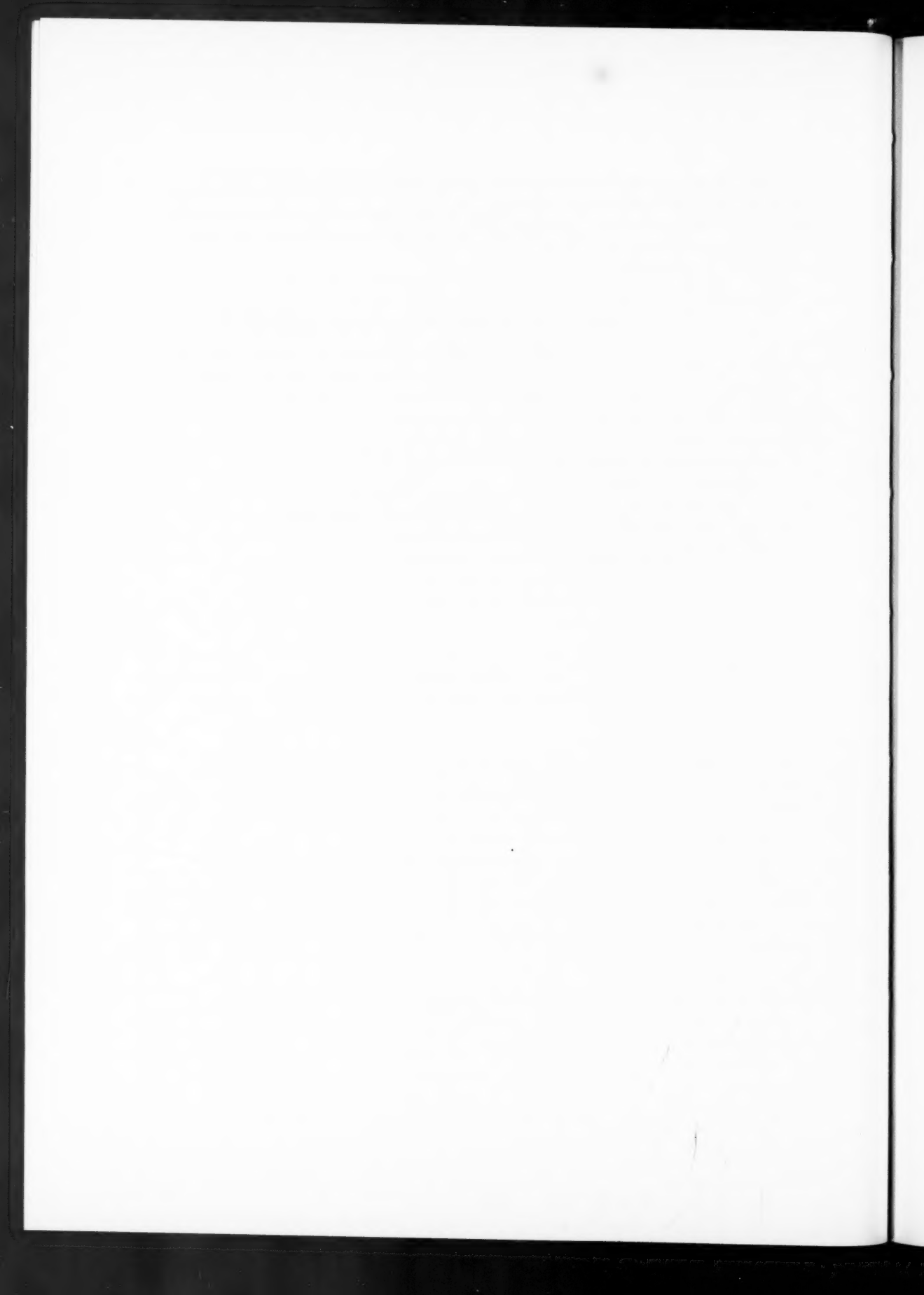
2) When the readiness and aptitude for development and modernization are present, what is the balance of profit and loss in taking traditional patterns into account? In simple terms, the argument is between possible loss of speed and possible gain in social continuity. The present study seems to suggest one criterion for a generally valid conclusion, namely, the type of modernization attempted. When modernization is individually oriented—as in industrialization

and urbanization—the "atomization" and dispersion of traditional structure may be indicated. When, however, change refers to a community—such as the type represented by the cooperative village—some adherence to traditional structures as the units of interaction would be necessary.

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PLANNED LAND SETTLEMENT

As population growth intensifies the world scarcity of food, efforts to bring new agricultural land into production are bound to increase. Most land settlement undoubtedly takes place spontaneously. Yet, as pressures on long-settled land increase, governments are led to offer incentives for settlement and to undertake detailed advance planning of pioneer colonies. Such measures are particularly attractive to the many countries in Latin America, Africa, and Southeast Asia which have high rates of population growth, low population densities, and vast expanses of apparently fertile land.

After D. CHRISTODOULOU's discussion of problems of planning land settlements, the selections in this section are case studies: of settlement planning in Bolivia by Adolfo LINARES, of social factors affecting a Nigerian scheme by Oladejo OKEDIJI, and of a Malaysian project by Willard HANNA. Other case studies not reprinted here indicate: the importance of tenure arrangements, problems arising from remoteness of settlements, the possibility of over-investment in administrative facilities, and situations where land-tenure reform may be much cheaper and more effective than settlement.

Few writers on settlement planning take much account of cost or of planning priorities. In some projects, governments have even spent more per settler than would have been necessary to create an industrial job, often without making the settler self-sustaining. Clearly, studies are needed whose results would help the planner avoid costly mistakes.

LAND SETTLEMENT: SOME BASIC ISSUES

D. Christodoulou

[Successful planned land settlement is more difficult than it might appear. Potential difficulties run the gamut from inadequate planning and conflicting objectives to high settler turnover resulting from financial burdens, lack of tenure, poor administration, and sociological problems.]

Land settlement, especially as a pioneering venture, has fired many people's imagination. There is hardly a country in the world that has not undertaken, at one time or another, a land settlement program. The opening of new frontiers, the wresting of new man-made production units from nature, and the creation of new human communities contain an element of romance with special appeal to many.

To people without direct experience of land settlement, the promotion and implementation of such a program may appear to be a fairly easy and uncomplicated matter. After all, settlement of new areas has been a constant factor in human history and all human communities started life as pioneering settlements. But such so-called spontaneous settlement has always been liable to the natural law of the survival of the fittest. Therefore, against all successfully established settlements must be set the far more numerous failed and forgotten ones.

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Although experience with land settlement projects has been extremely varied, it has not always been adequately analyzed and evaluated. The high rate of failure in such projects would almost certainly have been reduced if past experience had been properly evaluated, lessons drawn, and guidelines established for future programs. Enthusiasm should be accompanied by soundly based planning, adequate provision of finance, efficient and sufficient use of administrative resources, and a good grasp of the agricultural, economic, social, and human problems involved.

The Need for Planning

It must be stressed that, however modest the land settlement program envisioned, careful advance planning is vital for its success. Planning should include an assessment of expected cost and benefits or returns in quantitative terms. But land settlement cannot be judged on those criteria alone. For the governments concerned, social benefits and other intangible, hoped-for results which do not lend themselves to quantification may be more important than monetary or material considerations. A cost/benefit analysis reveals the magnitude of the program in financial terms and enables the authorities concerned to decide whether they can afford the venture, and whether the social benefits and intangible objectives are worth the cost involved.

A balance sheet should be drawn up indicating clearly and in terms as concrete as possible: a) the monetary expenditure and returns expected, b) the social costs and benefits involved, and c) the intangibles expected to enter on either side of the balance sheet. Vagueness can be dangerous and may prejudice success.

Specifying Objectives

Very rarely is it realized that land settlement projects are intrinsically multipurpose undertakings. Objectives may include any or all of the following: the use of "new" land and water resources; the settlement of unpopulated or underpopulated or frontier areas; the creation of model or new-type communities; the modernization of agriculture; the increase or diversification of agricultural production; the employment of unemployed groups; the provision of greater opportunities for underemployed farmers; settlement or resettlement of various groups (nomads, refugees, war veterans, immigrants, people from depressed or overcrowded areas); the creation of new institutions (cooperatives, new forms of land tenure and farm organization, demonstration farms, training or retraining establishments); and, generally, a new departure in farming or development in rural areas or regional development.

Clearly, some of these objectives may conflict, and failure to realize this may lead authorities engaged in land settlement to work at cross purposes. For example, the necessity of providing for the greatest number of needy people is not easy to reconcile with that of providing each family with a holding capable of both absorbing its labor and giving it an income sufficient to meet its essential requirements. The settlement of urban unemployed or nomadic people or people unfamiliar with farming cannot be expected to demonstrate successful new farming, at least not for a long time.

Problems of Land Acquisition

The universal appeal of land settlement as a measure for tackling land problems arises largely from the fact that governments and other authorities have been able to use land in their possession or under their control. This avoids the necessity of acquiring land, usually at considerable cost and with various difficulties, and, at times, even at the price of introducing and implementing a difficult land reform program.

Even when land in the possession of the government is to be used for settlement, the cost of bringing it under cultivation must be carefully assessed. Public land is usually residual and has remained undeveloped because of its low quality or other disadvantages, such as inaccessibility, difficulty in clearing, and infestation.

In many cases, too, the land is mistakenly thought to be public, while in other cases, although recognized as public, it has been subjected to trespass or squatting for a number of years. It is essential, therefore, that advance planning include a thorough investigation of the legal position of the tenure of the land intended for settlement (including a survey of water and grazing rights and other rights).

Common Pitfalls

It is often the hope not only of the land settlement promoters but of the beneficiaries themselves that, once the settlers acquire a plot of land, the era of prosperity will begin. Landholding has a special fascination, encouraging exaggerated expectations which often cloud realistic assessment of the chances of success. Applications from aspiring settlers usually far exceed the number that can be reasonably settled on the available land, and people who select settlers usually believe they are doing them a great favor. That this is not always the case is evident from the great turnover of settlers in land settlement projects in all parts of the world.

The best that can be said of many land settlement projects is that settlers are given opportunities to exert themselves and use

their labor and talents to get a reasonable, usually modest, income. In many other cases, the creation of depressed communities is all that has been achieved. Often, a realistic advance assessment would have made it obvious that the settler did not stand an even chance.

The difficulties of settlers on the land are numerous, even if one excludes emergency solutions for desperate situations, such as the temporary settlement of large numbers of refugees. A common fault in land settlement programs is to give each settler a holding too small for successful farming. There have been exceptional cases in which settlers have been helped to become privileged farmers, islands of prosperity amid poor farming conditions, but the overwhelming majority of projects, in fact, err in the other extreme. A further basic consideration is that a holding should be viable not only at the time of the establishment of settlers, but should also have potentialities for future development so that it can remain viable. Many settlers are grateful to start and even do well at the beginning, but when the pull of industry or other more remunerative employment is strong, they may leave the holding.

The selection of people for land settlement is the most important single decision taken by the land settlement administration. Men with little managerial experience (or, at best, with experience under different conditions) and, in too many cases, with no farming experience are usually expected to practice a new type of agriculture with techniques with which they are unfamiliar and on land of whose characteristics they are ignorant. When land has been reclaimed in a region where agriculture has not been practiced before, ignorance of the agricultural conditions sometimes extends also to the scientist and the agricultural advisory service.

Financial Burdens

The most acute problem faced by new settlers is their financial commitments. These may include payments for the land, credit for equipment and other requisites, loans for subsistence until they begin to produce, and, in some cases, payment for housing and even social overheads.

In order to meet these commitments, a settler must produce efficiently in adequate volume and sell at remunerative prices. He must farm successfully and have marketing facilities. These are exacting conditions. The key role of supporting measures—such as agricultural extension, controlled credit, cooperative development, marketing, and training—is too often ignored. Settlers cannot be expected to meet crushing financial commitments, to farm and sell successfully, without substantial aid, which should be planned and implemented as part of the land settlement project.

Tenure

Another much neglected aspect of land settlement is the possibility of introducing an imaginative system of land tenure and farm organization. Most people assume that the ideal goal in land settlement is the creation of a class of owner-occupiers. But the settler may prefer long-term tenancy with the right to nominate an heir to outright acquisition of his farm, if for no other reason than to avoid having to pay the purchase price for land at a time when he has so many other capital requirements for establishing and running a farm. Such long-term tenancies must be properly regulated and the rents must be within the ability of the farmers to pay. Arrangements for credit that do not depend on the farmers' having title to the land should be made. In underdeveloped countries, long-term tenancies and regulated rents are not easy to introduce and are especially difficult to administer; these problems require special care and handling.

In many cases, the problem of the ultimate tenure of the land in the settlement program is shelved. This is often worse than making the wrong choice of tenure. Uncertainty in the minds of the cultivators can cripple their initiative and curtail their risk-taking. Even when the land is public, uncertainty regarding the future status of the settlers' holdings can limit investment even by the state itself.

Frequently, tenure forms are dictated by the farming system envisaged or the one best suited to the agricultural conditions available. For example, large, contiguous fruit orchards can be more economically managed, especially under irrigation, than small, fragmented ones. In fact, efficient irrigation in general, especially where water resources are scarce, necessitates a systematic farm layout. This need can be met in a variety of ways—e.g., by state or cooperative ownership of the land, by group farming within the framework of individual ownership of the land, or by rotational block farming.

Integrating Settlements

Perhaps the most frequently neglected aspect of land settlement is the promotion of successful community building. Successful living together is not only good in itself, but is also an essential prerequisite for successful farming, which implies considerable give and take, if not conscious and systematic cooperation.

Newly arrived settlers face acute problems of adaptation to their environment. They need help and encouragement to found successful civic institutions, start an active and harmonious public life, and begin to forge close links among themselves. Positive contributions to this end include such things as successful layout of the

settlements, adequate provision of civic buildings, and promotion of cooperation, self-help, and cultural activities.

The initial problems confronting settlers in their efforts to adapt themselves to each other are often eased by the formation of settlements largely composed of families belonging to the same religious, kinship, or tribal group, or coming from the same village, provided of course that no narrow clannishness develops.

Furthermore, settlement of people amid populations belonging to a different group can raise problems of resentment and even hostility toward the settlers. In cases of settlement of nomads, latent hostilities between nomads and agriculturalists may also flare up. In all countries, settlers from other parts of the country are, initially at least, looked upon somehow as foreigners. Problems of this nature should be seriously considered and the harmonious social integration of the region imaginatively promoted.

Finally, successful community building and a stable human society cannot be promoted by settling people in conditions of isolation from the main streams of the country's economic, social, and cultural life. Settlements need efficient communications with urban centers and easy access to markets and ports. Isolation will lead to poor subsistence farming and economic hardship, and to impoverished social and cultural life which will stagnate because of non-renewal; desertion of the settlements is bound to set in.

Administrative Problems

No general formula of organization can be proposed for these exacting and complex programs. Some governments decide to work through existing departments with coordinating committees, while others opt for special authorities, institutes, or government departments.

In planning, execution, and administration of land settlement programs, economies of scale operate. Large projects permit more specialization and more sophisticated organization. Given a favorable government structure and a size of program justifying it, there is a good deal to be said for a unified administration dealing with all aspects of land settlement and employing specialized staff with adequate powers to handle the program effectively. Some governments use an alternative approach, namely, the use of contractors for much of the work in land settlement, especially land development.

An often neglected subject is the method and spirit with which land settlement authorities approach and handle the human and

social problems of land settlement. The most prevalent spirit is authoritarian. There is, of course, much to be said for the land settlement administration's exercising authority, providing a lead (at least in the initial stages) and devising and putting through a concrete and clearly defined program. However, nothing can be said in defense of petty authoritarianism at the settlement level. Progress in the long run can be ensured only through the establishment of mutual trust and respect between the settlers and the administrative or professional staff. The development of healthy leadership among the settlers is absolutely necessary.

Sociological Problems

The high turnover of settlers is one of the disquieting aspects of most settlement projects. Imaginative planning could save much of this wastage, even though many problems cannot be foreseen. Much can be learned from studying the sociological traits of the communities from which the settlers come; a good deal can also be learned from the reactions and attitudes of settlers in similar projects.

There are well-known sociological responses which could be assessed in advance and taken into consideration in settlement planning. For example, many peoples are used to living in fairly large villages, often with kith and kin; isolated homesteads are unlikely to appeal to them. In some communities, women do most of the agricultural work; bachelor farms will not work—at least not until a radical change in outlook and patterns of work takes place. Land settlements established in the expectation that a high-caste group will do direct agricultural work are likely to run into labor troubles. These and other, more subtle sociological and cultural traits should be discovered and assessed, and land settlement should be planned in full knowledge of their implications. Calculated risks may have to be taken, but the emphasis should be on the word "calculated."

This brief review of some of the complexities and subtleties involved should suffice to underline the heavy responsibility falling on land settlement planners and administrators.

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LAND SETTLEMENT IN BOLIVIA

Adolfo Linares

[This study suggests that "semi-managed" settlement is preferable to both fully managed settlement, with its prohibitive costs, and spontaneous settlement, with its high waste of human resources. The intermediate approach concentrates on resource surveys, road building, and provision of modest facilities for services and credit. Opinions expressed are not necessarily those of the Inter-American Development Bank.]

The Bolivian 1962-1971 Ten-Year Economic and Social Development Plan provides for a number of production measures needed to achieve the following basic objectives in the agricultural sector: a) improvement in the nutrition levels of the population; b) gradual substitution of domestic for imported foodstuffs, whose cost exerts strong pressure on the balance of payments; and c) the initiation or strengthening of agricultural export items which earn foreign exchange.

To achieve these objectives, the Plan also recommends that execution of the Land Settlement Program in the subtropical areas of Bolivia be intensified to relieve population pressure on certain areas of the country, to alleviate the shortage of food for the population, to open up new areas to cultivation by encouraging internal migration thither, to integrate the country effectively, and, finally, gradually to achieve a more reasonable distribution of the population.

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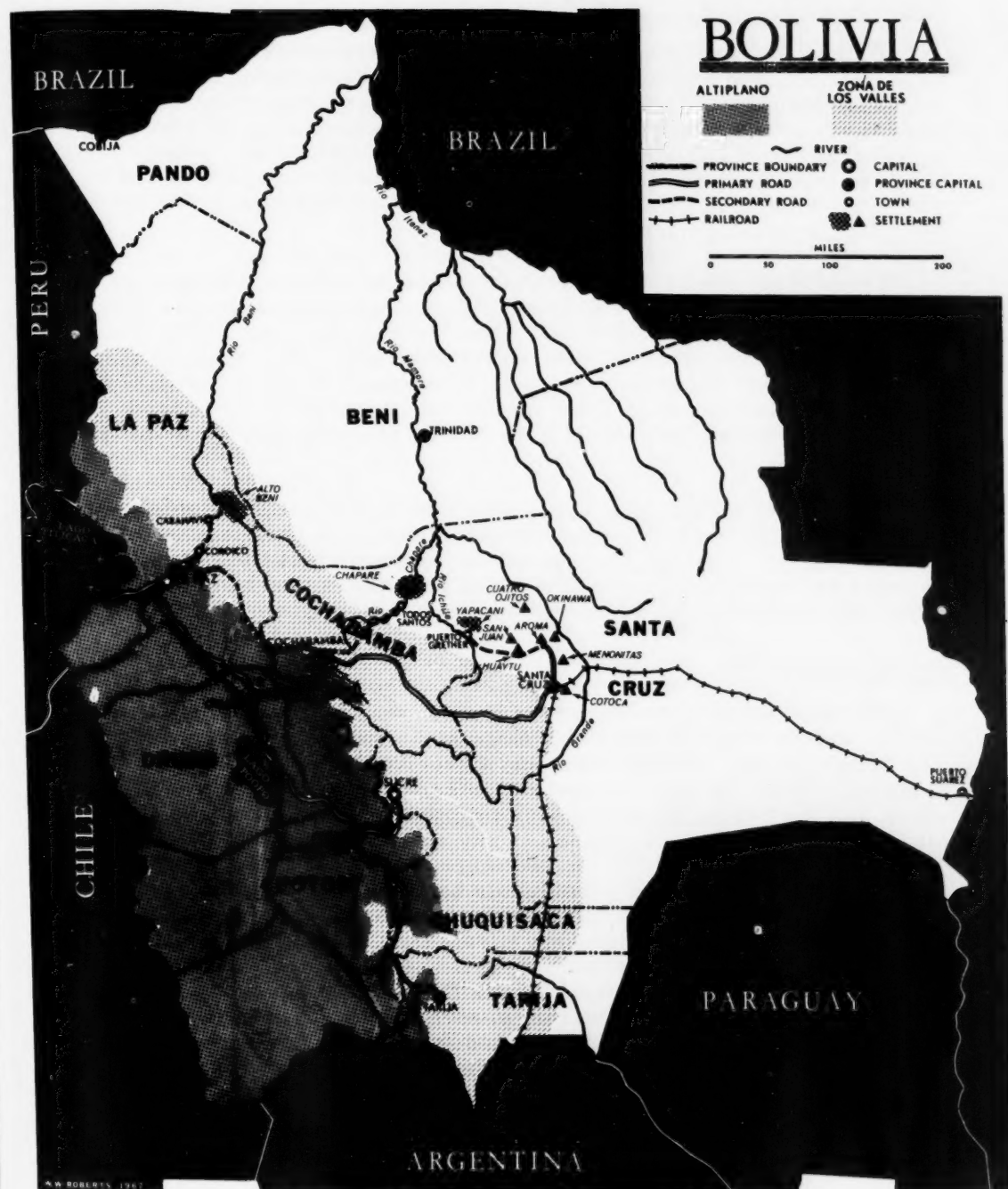
Furthermore, the land settlement programs are an indispensable adjunct to the current agrarian reform. There is no doubt that implementation of the agrarian reform gave rise to uneconomically small holdings, and this situation could grow even worse if the land supply were to be fragmented into multitudes of small tracts. The economic and social problems that such excessive splintering would engender could be solved by remerging these dwarf plots into economically viable family units. Remerging, however, presupposes the displacement of numerous rural families to other parts of the country. This is where land settlement acts to correct the land-tenure problem created by the agrarian reform.

Population Distribution

The distribution of the rural population in Bolivia exhibits special characteristics. The altiplano, at a mean altitude of 4,000 meters above sea level, supports a rural population of approximately 1 million persons (30 percent of the total population). The zone of the valleys, at an altitude of 2,000 to 3,000 m. above sea level, has a rural population estimated at 1.5 million (55 percent of the total). Finally, the lowlands in eastern and northern Bolivia have a population of only 400,000 (14 percent of the total).

The soil of the altiplano is poor, the farming areas are overpopulated relative to their renewable resources, the region does not produce enough food for its own population, temperatures are very low, and rainfall very scarce. The climate is generally rigorous and only permits the cultivation of certain cereals and the rearing of sheep and goats. The valleys and yungas (deep broad valleys) are more suitable for agriculture despite their topography. Rainfall is better distributed and more abundant. The yungas are partly subtropical in character. The basically subtropical plains are lowlands 400 to 600 m. above sea level. Most of the area is potentially rich farming and stockraising land which, until lately, was virtually unworked. In recent years, however, particularly in the eastern region of Santa Cruz, it has been actively developed and is one of the country's most promising areas.

Comparison of the rural population in the various zones with their renewable natural resources reveals an unbalanced population distribution that has generated excessive pressure on natural resources on the altiplano and in the valleys. This pressure has resulted in the gradual impoverishment of these areas, where the timber and brush cover has disappeared, the soil has been depleted and, inevitably, eroded by misuse. The result of all this is inadequate crop yields and, consequently, extremely low economic and social living standards for the resident rural population. In contrast, the northern and eastern lowlands have remained practically virgin and may be described as unpopulated.



Experience in Land Settlement

Bolivia has had over a decade of experience in the formation, organization, and administration of agricultural settlements in subtropical regions. At present, however, it can be said with assurance that not enough experienced personnel is available for executing large-scale land settlement projects, although efforts are being made to train such personnel, particularly with the cooperation of the Inter-American Development Bank (IDB) and the Agency for International Development (AID).

Up to 1964, land settlement programs had very modest goals, chiefly owing to a shortage of financing for their execution; fulfillment of these programs, however, had the virtue of proving once and for all that the altiplano man could adapt himself to the lowlands. This fact becomes even more important when it is considered that the Development Plan establishes the need to move from the altiplano to the lowlands of Bolivia not less than 100,000 families in ten years.

In general, all the land settlement centers taught profitable lessons which later led to a definition of the basis for Bolivia's land settlement policy. Certain procedures and systems that had proved harmful and inadequate were discarded and others that had been found satisfactory were perfected.

Immigrant Centers

The land settlement centers of Bolivia may be divided into those which consist of immigrants and those made up of native Bolivians. The latter include centers which have received some guidance and assistance from the government and international agencies and others which are the result of spontaneous migration and have received no official orientation or assistance of any sort.

Among the immigrant settlements are San Juan and Okinawa (Japanese immigrants) and the German Mennonite settlement. In the second group, the settlements run by the Corporación Boliviana de Fomento (CBF) north of Santa Cruz and in the Alto Beni and that of the Andean Mission at Cotoca (Santa Cruz) have received orientation and economic assistance from governmental and international agencies. The most important spontaneous settlements are in the yungas of La Paz Department and in the Chapare.

The San Juan settlement was established in 1955 and has 35,000 hectares of level, fertile land suitable for rice, jute, and other tropical crops. In 1964, San Juan had 1,500 inhabitants selected upon compliance with the following requirements: they had to move

from Japan to Bolivia with their families (at least 2 persons able to work, from 15 to 50 years of age), live permanently in Bolivia, have an agricultural background, be in good health, have no criminal record, bring along not less than \$400 per family from their own funds, and travel from Japan at the expense of the Japanese government with 8 years to reimburse that expense. In addition, they had to accept an endowment of 50 hectares per family, the obligation of joining into cooperatives, and a commitment to sell their production to their own cooperative.

The ecological conditions of this settlement, its administrative organization, and the conditions for membership assured its success. The gradual transfer of its administration to the settlers' cooperative also contributed effectively. The investment per family up to 1964 has been variously assessed at from \$3,000 to over \$4,000.

The Okinawa settlement has an area of 58,000 hectares and a population of 3,500 Japanese inhabitants in 500 family groups. The difference from San Juan lies entirely in the fact that the settlers have complete freedom to sell their products individually. The investment exceeds \$2,000 per family, not including the cost of moving from Okinawa to Bolivia.

The Mennonite settlement has four different groups, which arrived in Bolivia at different times. They comprise, in all, 30 families which acquired land by direct purchase. They are individualistically organized and have subdivided into groups rather out of a sense of cooperation. It was impossible to estimate the total investment; in any event, this investment would not serve as a yardstick for comparison with other settlements.

Settlements Run by the Corporación Boliviana de Fomento

Among the settlements organized by the CBF, the Aroma Settlement deserves special mention. It has 3,800 hectares and was established in 1954 with 240 families (1,200 inhabitants) from the Cochabamba district. No actual regulation was laid down for selection of settlers, but authorities made intensive, intelligent, and persistent pioneering efforts to locate settlers willing to move to Aroma. The lack of prerequisites for admittance is partly to blame for the frequent changes that occurred in the membership of the settlement. Many settlers returned to their place of origin, but they were immediately replaced until finally a group was assembled which may be regarded as select, aggressive, and extremely capable, and which has been the cornerstone for the success of this project.

Each family has 15 hectares; cultivation of these gives option to an additional 13-hectare tract. The settlers market their product freely and are also free to determine their own production plans. Annual income per family in 1964 averaged \$600 per year, which is believed to be the highest rural family income in Bolivia.

The CBF kept ultimate control of this settlement until it was fully consolidated. Later, it maintained only one officer to go on awarding tracts and keep an eye on the social aspects; he also served as a guide to the settler in agricultural matters, the selection of crops, marketing, etc. The CBF's investments and outlays at this settlement do not exceed \$600 per family.

Cuatro Ojitos and Huaytú, also organized by the CBF, are settlements of 16,000 and 10,000 hectares, respectively, north of Santa Cruz. The former has 2,200 inhabitants, the latter 700. These settlements differ markedly from Aroma; in them the criterion that settlers should be selected prevailed, although official cooperation, given only at the outset, was limited to opening roads, partially clearing the tracts, technical direction, and the handling of certain social aspects. The total investment is computed at \$400 per family for Cuatro Ojitos and \$500 for Huaytú.

The Cotoca Settlement was founded in 1955 as an experimental center run by the Andean Mission. The settlers were chosen on the altiplano (Department of Potosi). The members currently sell their produce individually.

This experimental center has not been very successful. Furthermore, investment per family is excessive (\$4,200) and does not include salaries paid by international agencies to officials who perform technical and administrative services.

Spontaneous Migratory Flows

In addition to the settlements described above, for more than 30 years there have been certain internal spontaneous migratory flows in Bolivia that have become nationally important because of the location of the districts, their agricultural potential, and their production volume. The two most salient examples are Chapare, in the Department of Cochabamba, and Caranavi, in the Department of La Paz.

In 1964, it was estimated that the previous decade had seen the settlement of approximately 10,000 families in the region of Chapare after the opening of the Cochabamba-Todos Santos road, with no official action being taken or cooperation given. The opening of the road from Coroico to Caranavi (Department of La Paz) also loosed a heavy migration to Caranavi, which gathered momentum beginning in 1960.

The organization of the Settlement Detachment at the initiative of the CBF and with the cooperation of the national army has spurred the penetration by homesteaders into other areas north and west of Santa Cruz. A good example of this penetration is Puerto Grether, in the Yapacani district, started in 1961, where about 300 families have managed to establish themselves spontaneously.

Observed Results

The strictest membership standards were those of the Japanese settlements which, in consequence, suffered not a single desertion. The colonies administered by the CBF, while not adhering to strict standards for selection, managed to fill the gaps left by some deserters with other and better settlers. And the most capable people ultimately became the permanent settlers. The principal causes of desertion were inadequate nutrition, poor sanitation and education, and neglect of social relations, which in many cases led to isolation of the settler and his family.

The CBF settlements clearly demonstrated that homesteaders from the altiplano, while not finding in the tropical areas the same basic food or the climate and environment to which they were accustomed, encountered no insoluble difficulties in adapting to the hot, humid climate of the subtropics. Although a slight improvement in their situation was the best they could hope for in the short run, they quickly conquered the malaise, the homesickness, and the despair that dog the footsteps of the uprooted. These feelings were much more evident in settlers who came without their families, who in many cases returned to their place of origin to fetch them and, at times, to induce friends and relatives to move east. In this way, temporary deserters helped publicize the settlements.

When the homesteaders were people entirely new to farming, such as mechanical or industrial workers, the percentage of deserters was considerably higher.

The lack of farm credit facilities at all but the Japanese settlements was another reason for the desertions. Finally, the production plans were not properly thought-out; but because these were the first settlements, and because the country as a whole was beset by extreme shortages in the production of certain foods, the lack of production plans did not greatly inconvenience the organization of the settlements at the outset. Today, however, poor production planning could seriously hinder the settlement program.

The size of the homestead varies from one settlement to another between 10 and 50 hectares per family, with holdings of 15 hectares predominating. This size is based on the experience that the settler

and his family cannot work, on the average, more than 3 or 4 hectares, and that he must hire additional labor to cultivate the rest of his holding. Of course, a complementary livestock operation would require more land.

Settlement of the Alto Beni

The presence of spontaneous settlers in the Caranavi district (Department of La Paz), and the long-standing national desire to construct the La Paz-Beni River highway, were the incentives for the project for settlement of the Alto Beni under the aegis of the CBF.

Faced with the unyielding fact that the task of building the La Paz-Beni road was far too ambitious to be financed in the short run, the CBF considered the possibility of gradually penetrating toward the Beni River by developing the lowlands through land settlement projects to whose financing foreign aid could be persuaded to contribute. The first land settlement project, based on the foregoing ideas, was planned as an investment recoverable within a reasonable term. Preplanning studies included aerophotogrammetric surveys, geological studies, determination of penetration routes, ecological studies, forestry research, and studies on conditions of adaptability, environmental sanitation, industrial development potential, permanent crops, and land tenure.

These studies were used to plan: a) the physical aspects such as the division into urban, suburban, and farming areas, production units, etc.; b) social aspects such as the features of urban, mining, and rural unemployment, and medical and educational services; c) economic aspects such as the orientation of production, agricultural technical assistance, the provision of tools, agricultural diversification, desirability that the investments be recoverable, farm credit needs; d) the administrative aspects, the need to set up appropriate machinery for management and control, with enough flexibility and independence to project the orderly growth of the settlements without destroying the individuality of the small producer, and to provide guidance in production and marketing.

The Alto Beni Settlement project was subdivided into various settlement units, called nuclei, encompassing 1,500 to 2,000 hectares, able to accommodate 120 to 150 homesteading families (12 to 15 hectares per family). The presettlement work of building penetration roads and community centers and the division into tracts and stump-clearing of one hectare of land per family was done by the CBF with the cooperation of the chosen settlers, who during this stage received medical attention, food rations, seed, clothing, and certain items for domestic use from the CBF.

Once the presettlement work was completed, the drawing of lots for the plots and houses was undertaken. Each family received 10 to 12 hectares as a free endowment, with option to purchase 10 additional hectares when it had shown that it had cultivated the free plot and committed itself to a general production plan. Final ownership of the tracts would be authorized only after five years of proven occupancy, construction of the permanent dwelling, and fulfillment of the farming plans adopted for the settlement as a whole.

The production plans were carefully designed to assure more than a merely subsistence agricultural output by encouraging the production of commodities with an assured domestic or foreign market. On each homestead, two hectares were to be planted to subsistence crops, six to commercial crops, and two reserved for forestry and crop rotation. The settlement units (120 to 150 families) were served by one agronomist, three medical technicians, one nurse, one administrative official, and one assistant. One doctor was assigned to care for three or four units.

The settlement contracts established the obligation to pay a given percentage of the presettlement expenses and to contribute proportionately to the medical, educational, and technical assistance costs, all of which would be paid in eleven annual installments beginning in the fifth year.

Rules were established for selection of the settlers based on the experience acquired in previous years. The basic principles adopted were: a) prior experience in agricultural work; b) good health and no physical defects; c) preference for families with at least two able-bodied persons; d) a settler's willingness to move to the settlement with his entire family and to sell such small land holdings as he might own in his place of origin, as soon as his new enterprise was operating normally. A special selection committee, assisted by sociologists and a social worker, passed on the admissions.

The estimate of the total investment per family in this project came to \$1,200. Estimated income ranged from \$200 in the first year up to \$2,500 in the eighth. Taking account of the different crops and their distribution throughout the area, it was estimated that the gross product would develop from \$20,000 for the farm year 1962 up to \$16 million per year after six years.

New Projects

On the basis of the initial success of the Alto Beni settlement project, financed chiefly with AID resources, and adopting the objective given in the Development Plan, the CBF obtained in 1964 two

loans from the IDB for further settlement and an accompanying agricultural credit program. Settlement is in three areas: Alto Beni (continuation of the first program), Yapacani, and Chapare. Of a total cost of \$21.5 million, 47 percent is being contributed by the Government of Bolivia, 42 percent by the IDB, and 11 percent by the Government of the United States through AID.

With the resources of this project, 8,000 rural families will be transferred from the altiplano and the Andean valleys and intermediate zones to the indicated regions in the tropical areas of Bolivia. The installation of 7,000 of these families will be semi-managed and that of 1,000 fully managed, at a cost per family of \$650 and \$2,800, respectively. Since the cost of a number of the infrastructural works under the project should not be considered entirely chargeable to the land settlement, the average cost per family settled is estimated at \$1,000.

Despite all the technical, administrative, and financial difficulties inherent in a project of this scope, it is now in progress, and 965 families are now settled in the Alto Beni, 1,163 in Yapacani, and 430 in Chapare. In 1966, only two years after the first settlements were effected under the program, the value of agricultural production came to \$600,000, the equivalent of an income of over \$270 per family, which is higher than that earned by the farmers on the altiplano and in the valleys.

Observations

The experience described above shows that settlement programs can take three clearly differentiated forms: the first and simplest is the spontaneous migration of groups into new districts, impelled by reasons which, for all their variety, are essentially economic. This form of settlement has a very low social and financial cost but the loss of human capital may be very high, particularly if it advances into virgin areas, where dangers and diseases multiply. Another and more elaborate form is so-called managed or, more accurately, induced settlement, in which a study is made of the proposed settlement area, after which an official or private agency proceeds to clear it, provides access to the district, selects the settlers, moves them, provides them with various facilities, persuades them to raise specific crops, creates facilities for education and medical and technical assistance, and exercises ultimate control over the project. This form necessarily entails a high social cost and can be repeated very few times, particularly in an underdeveloped country, which is generally short on resources.

There is a third form, intermediate between the two described above, in which the state or public corporations build some

infrastructure to facilitate access to the new regions, and create subsistence conditions by providing sanitary, educational, or marketing facilities for the settlers. This system enormously facilitates the advance of settlers into new districts and its cost is undoubtedly less than in managed settlements.

The advantages and disadvantages of each of these systems may be stated as follows:

1) In spontaneous settlement, there is a very high degree of natural selection and, consequently, the ablest homesteaders with the most initiative are settled at no direct cost to the country. The disadvantages are that this method is very slow, and very costly in human capital; the land is used indiscriminately, with the risk that natural resources will be depleted because settlers lack proper guidance; this lack also holds down production. The final result may be merely a transfer of poverty from one part of the country to another.

2) In managed settlement, the advantages could be as follows: less hardship for the homesteaders, rapid adaptation, better utilization of natural resources, rapid economic improvement of the homesteaders, assured guidance of production, prospects for the recovery of a high percentage of the investment. The disadvantages are: very high social cost and excessive management, which may eventually cancel out individual initiative because of excessive paternalism, danger of erring in production plans and of giving rise to conflicts in the marketing of the products, a responsibility of the directing agencies which does not end with the settlement alone, but rather extends to marketing and to future plans of production. The high cost of this form makes it unsuitable as a regular vehicle for the resettlement of large numbers of people.

3) The intermediate form would seem to offer the greater advantages. Infrastructure is created whose benefits are not restricted to the settlement districts. The execution of these works encourages settlers to migrate spontaneously by sparing them some of the expenses to which the move would otherwise expose them. In its initial phase, the settlement is the joint responsibility of the homesteaders and the organizing institution; the facilities and services may be installed gradually and may consolidate the settlement by gradually improving the living standard of the settlers. Through a farm credit system, production can be guided and cooperatives organized, and production and marketing problems can be solved. Finally, its cost often turns out to be compatible with the effort that

the country itself can make and with the possibility of obtaining international financing.

[Adapted and updated by the author from his article, "Problemas de Colonización y Su Influencia en el Desarrollo Económico," Revista de la Facultad de Ciencias Económicas, Universidad Mayor de San Simón, Cochabamba, Bolivia, Año V, Junio 1964, pp. 48-71.]

SOME SOCIO-CULTURAL PROBLEMS IN THE WESTERN NIGERIA LAND SETTLEMENT SCHEME

Oladejo O. Okediji

[Nigerian experience in land settlement projects highlights the importance of social factors—intragroup relations, relations between settlers and government authorities, community facilities, etc. Deficiencies on these scores led to high settler turnover, adding greatly to settlement costs per capita.]

Our purpose in this paper is to make some comments on the implications of some noneconomic factors for the Land Settlement Scheme in Western Nigeria, using as a case study one of the oldest and, in a relative sense, most successful settlements in the region.

The Ilora Farm Settlement

Ilora Farm Settlement (IFS) is one of the 13 pilot settlements established in the region early in 1960. It covers an area of 12 square miles [31 km²] of gently rolling savannah country. The village is circular, with a big central land enclosure where future community services will be located. It is perched on a small hill, with farm holdings radiating in all directions.

The total population as of April 1965, when I was doing field work there, was 448. Of this number, settlers, their wives, and dependents

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accounted for 140. The rest were technical officers of various grades, labourers, their relatives, and dependents.

Each of the 58 settlers, regardless of his marital status, occupies a house consisting of two bedrooms, a parlour, and two store rooms. The new houses have, in addition, a kitchen, a bathroom, and a latrine.

Each settler is entitled to have a 71-acre [28.8 hectare] holding, a cage of 192 laying chickens, a broiler house stocked with 100 chickens, and a pig pen. These are provided on "supervised credit" basis. Whatever amount the government spends to establish a settler will have to be paid back with interest. However, due to scarce technical facilities and staff shortage, it has not been possible to lay out all the holdings or provide all the settlers with poultry and pig pens.

The Settler-Turnover Problem

Partly because of social factors which will be considered presently, IFS has had a high rate of settler turnover through desertion, resignation, or expulsion. Between 1960 and August 1965, approximately 47 percent of those recruited into the settlement left. Expulsions were said to be due to laziness, insubordination, bad management, theft, or quarrelsomeness. There was the peculiar case of three who were sent away because "they were ashamed to be settlers." They erected a ring where they boxed by day and around which they ran in the evenings. At dusk they tied hurricane lamps around their waists. They devoted less than an hour per day to farm work.

These various ways of adjusting to a new situation became so widespread in 1962 that the FAO specialists called upon by the Ministry of Agriculture and Natural Resources (MANR) to help build the scheme had to invite a UNESCO sociologist to carry out an independent investigation to ascertain the causes. After interviewing some of the ex-settlers, he came to the conclusion that "apart from several secondary unfortunate developments, the basic cause of the difficulties... has been the choice of the wrong type of settler."

Having lived for many weeks at IFS, I want to go beyond this conclusion to analyse some of the problems which might have forced even the right type of settler into similar adjustive behaviours. My analysis will cover the provision of social facilities, recruitment and training patterns, the system of enforced saving, and the settlement's status system.

Social Facilities

There is no doubt that the government attached great importance to the provision of social facilities (which include, among other things, roads, pipeborne water, school, clinic, shopping centre, community centre, post office, and places of worship) on each of the settlements, especially since it thought that it could thereby attract young school leavers to the scheme. But many factors slowed down the establishment of these facilities at IFS. Being a nuclear-type settlement, as opposed to a peripheral type where less capital expenditure is needed for the establishment of community services, no advantages could be taken of pre-existing social facilities. An estimated total of £60,025 [\$168,070] had been paid for land acquisition and crop compensation. The scheme, in general, was already under attack for spending over £3,000 [\$8,400] to establish a settler. Even without this criticism, so many ministries were involved in the establishment of the scheme that, within the context of official bureaucracy, they could not have acted with the needed simultaneity or urgency of purpose on a project which was marginal to their major commitments. It was no surprise, then, that when a survey was carried out among the settlers, 76 percent were dissatisfied with medical facilities, 74 percent with transportation, and 66 percent with recreational and school facilities respectively. Dissatisfaction was low for religious (22 percent) and housing (28 percent) facilities.

The high dissatisfaction with transportation facilities indicates a heightened feeling of isolation among settlers and seems to be directly responsible for the anxiety connected with the lack of medical facilities. In cases of sudden illness or emergency childbirth, the settlement is thrown into a state of panic and helplessness unless the senior technical officer is around to take the affected person to the nearest hospital 10 miles [6.2 km.] away.

On the other hand, the lack of adequate recreational facilities leads to a widespread urge to go to Ilora, the nearest town (seven miles from the settlement), especially on weekends. But many settlers who do not have bicycles have to depend on the irregular commercial transportation service for the journey; and, in many cases, they have to stay overnight in the town because of lack of transportation to travel back. This is usually at the expense of their poultry, which needs constant care in order to ensure optimum egg production. This is one of the reasons why unmarried settlers suffer heavier financial loss when extended-family obligations take them away from the settlement for several days, during which time they can, at best, entrust the care of their poultry to friends.

The nearest school to the settlement is about three miles. This means that the children, relatives, or dependents of settlers

who attend school have to walk six miles every day. Apart from the fact that they have to be away for most of the week-days, they are usually too tired after school hours to constitute an effective labour force to settlers on whom they depend for financial support.

Those who registered dissatisfaction with their houses complained that they had no kitchens, bathrooms, or latrines; that they had not been provided with beds, mattresses, tables, lamps, chairs, and mosquito nets; or that needed repairs usually take a long time before they are carried out. Some deplore the use of glass windows which do not ensure domestic privacy. It has become a common practice to paint bedroom windows creamy white or dark or to plaster them with newspaper sheets.

On the whole, settlers feel satisfied that they have single houses to themselves.

Recruitment Pattern

The main problem here is the settlers' awareness that official recruitment policy has shifted importance from young unmarried school leavers to adult, educated, married ones. Since both live side by side on the settlement, the latter (supported at times by some of the technical officers) interpret the change in policy as an admission that the former are not responsive enough. This argument is therefore used in many cases to exclude young unmarried settlers from important committee positions where they could actively participate in village affairs. In such an atmosphere, where the need for recognition is so great, this exclusion leads to frustration which is usually expressed in antagonism against old settlers at village meetings.

There are also indications that the piecemeal annual recruitment of settlers into the farm settlement creates some difficulties both for the adjustment of settlers and the effectiveness of the village's informal governing body. Since the basic facilities needed by new settlers are never sufficiently ready by the time they arrive from the farm institute, there is a tendency for each new set to agitate for these facilities at the time when the previous sets are just settling down and can least afford to show much concern. The apathetic attitude of the old settlers to the demands of the new ones only helps to reinforce distrust. The new settlers, therefore, register their dissatisfaction by showing lack of interest in village affairs and by withdrawing their cooperation and loyalty from the informal village leadership.

Pattern of Training

The boldness of the Farm Settlement Scheme and the speed with which it was started made thorough formal organisational planning and execution difficult. The original plan was to train all prospective settlers for two years at a farm institute before transferring them to farm settlements. But, since such training would have delayed the functioning of the 13 pilot farm settlements by two years, it was decided in 1960 to train the pioneer settlers where they would subsequently settle. Simultaneously, another batch of prospective settlers started their training at farm institutes, spent one year there, and were sent to farm settlements to complete the remaining one-year training period. The first batch of settlers who completed their full training at a farm institute were sent to various settlements in 1963.

Although all training programmes were scheduled to start in 1960, an FAO specialist admitted in 1961 that there was,

"as yet no clear pattern or scheme of systematic training... for those... young men already on the Settlements. In 1960, the schemes on the individual settlements varied from a talk or lecture everyday to nothing at all."

The above contrasts sharply with the 1,440 lectures spread over a two-year period at the farm institutes. The lectures cover broad categories such as crop husbandry, livestock husbandry, farm management and organisation, farm mechanisation and soil conservation, and general subjects (i.e., cooperative principles and procedures, English, civics, rural science).

This difference in training constitutes another major source of intragroup conflict among settlers. Each makes its claim to village leadership by virtue of its "superior" training. Already, the recruitment policy has favoured a core of pioneer settlers in this claim. But these have gone a step further to employ, with the connivance of the senior technical officers, the Yoruba seniority principle—which confers authority for the management of village affairs on pioneer groups—to monopolise the important committee positions. Moreover, the monopoly has been given a semblance of legitimacy by the insertion of an appropriate clause to the effect in the village's constitution. This guarantee-of-status clause now makes many of the office-holders perceive their committee positions in ascriptive terms and their authority over other settlers in absolute terms.

It is in this context that one can fully understand why the other settlers—especially the farm institute trainees who are now in the majority—expend most of their time on plans to dislodge the village

leadership. (The poor production record at IFS since 1961 is a partial indication of this misdirected use of energy.) The pioneer group, on its part, is aware of the threat posed by the numerical strength of the farm institute recruits. Consequently, annual elections for committee posts are characterized by stopgap devices designed to return old officers to leadership positions.

The pattern of training is, therefore, crucial in bringing about events which prevent the achievement of village solidarity, upon which depends the success of the cooperative scheme.

Status System

The settlement's status system can be broken down into three major categories—technical officer, settlers, and labourers. Conflict arises between the settlers and the lowest grade of technical officer—the field overseers who live in the settlements to supervise the agricultural operations.

The conflict emanates from the field overseers' training programme, which in rigour, scope, and length of time cannot compare with that of the settlers, but which gives the field overseers a supervisory role over the latter's agricultural operations and, to some extent, domestic life. The majority of field overseers are required to have a higher standard of education than settlers. However, the settlers, in view of the "quality" of their own training, feel that they are sufficiently qualified to carry out their agricultural operations without the benefit of any supervision or advice from field overseers. The situation is not much helped by a system of reward which now makes it possible for a few hardworking, albeit privileged, settlers to earn more than field overseers. The latter, consciously or unconsciously, resort to high-handedness or sabotage to induce a cut-back in the income of settlers by frustrating, discouraging, or undermining their productive efforts. The goal is to avert the potential corrosive effect on their status and prestige. Settlers react by stiffening their disrespect for and insubordination to field overseers.

System of Saving

The Cooperative, Thrift and Loans Society (C. T. & L. S.) is one of the innovations which has received the strongest resistance from the settlers. The reasons for this are many. The mandatory monthly contribution constitutes a strain on settlers' domestic budget and its enforced nature is a reminder to the majority of settlers of the formal organisation's conception of them as being immature. Unlike the traditional saving system (esu or ajo), which is voluntary and cyclical with a basic understanding as to who will take what and when at regular points in the cycle, the C. T. & L. S. has a linear principle of

organisation which does not seem to settlers to lead anywhere. "We contribute money every month and the money just disappears; we don't even know how much we have contributed."

In theory, any settler with "good reasons" can borrow and receive loans if the amount to be borrowed does not exceed half his contribution and he agrees to repay it in three consecutive monthly instalments starting from the month following the granting of the loan. But one glaring fact is that applications for loans have to be approved first by a committee of two pioneer settlers representing the village assembly, after which the senior technical officers would ratify the approval. This procedure has turned the savings system into an effective social sanction "to keep settlers in line" or to force them to abide by the decisions of the village committees. The sanction takes the form of outright disapproval of applications or the deliberate slowing down of the borrowing process so as to make the request lapse by default.

The survey carried out shows that applications for loans have been made for burial, naming, and marriage ceremonies; to cover hospital charges of relatives; to buy bicycles; to help dependents; and for marriage payments. These are some of the "good" reasons. "Frivolous" requests for loans were those made for such expressive activities as birthday ceremony, feeding, enjoyment after a year's contribution, and the purchase of a club uniform.

But frivolous as these reasons appear to be, they underscore the fundamental difference between the traditional saving system and the C. T. & L. S. Since the system is voluntary, no member has a right to prescribe to another the way his esu or ajo is to be spent. Moreover, in the traditional system, savings are utilised as target, all-purpose money; in the C. T. & L. S. they are not.

Another problem is the discriminatory way in which applications for loan are granted in favour of pioneer settlers. This tends to overshadow the official objective: to use the system to show settlers how to cultivate the spirit of cooperation, thrift, and self-help. Rather, the way in which it is administered at IFS makes many settlers see it as a device to cover their indebtedness to the MANR whenever they resign, desert, or are expelled.

Summary and Conclusion

Economic planners tend to emphasize the false assumption that economic behaviour is determined largely by the profit motive to the exclusion of the influence of other socio-cultural factors in the work environment. But, apart from practical benefits, other factors—social, cultural, and psychological—may be important in

determining the attitude of people toward change and the way in which they cooperate to make innovative ideas work.

My purpose in this paper has been to analyse the causes and effects of these factors on the Western Nigeria Land Settlement Scheme in terms of inadequate social facilities, the intragroup conflict brought about by the recruitment and training patterns, the problems caused by the asymmetrical role relationship between the settlers and the lowest grade of technical officers, and the clash of values involved in the systems of enforced saving. Underlying these problems are the constant changes in official policy which impose a great demand on the adjustive capability of settlers.

In this light, it will seem simplistic to explain the resignations, desertions, and expulsion of settlers in terms of laziness, insubordination, mismanagement, or quarrelsomeness. Neither will it be sufficiently illuminating to attribute these behaviours primarily to the choice of the wrong type of settlers. Rather, this range of behaviours is seen as the logical and inevitable product of settlers' interaction with their physical and social environments which do not appear to offer them adequate material reward or protection.

The new type of technology brought into the scheme calls for a structural redefinition of social relationships. And unless 1) the process of appointment into the village committees is liberalized, 2) the pattern of training is standardized, 3) the recruitment pattern is modified so as to facilitate the intake of the remaining settlers earmarked for each settlement almost all at once, 4) the status system is changed to fit the authority structure of the formal organization charged with the management of the project, and 5) the system of enforced saving is adjusted to incorporate elements of the traditional value system, the land settlement scheme will not be able to distribute the socio-economic satisfaction which is crucial to its success, and settler dissatisfaction will continue to manifest itself in continued desertions, resignations, and expulsions.

[Excerpted from "Some Socio-Cultural Problems in the Western Nigerian Land Settlement Scheme: A Case Study, The Nigerian Journal of Economic and Social Studies, Nigerian Economic Society, Ibadan, Volume VII, Number 3, November 1965, \$ 2.00, pp. 301-310.]

CUSHIONING AND CONDITIONING THE PIONEER IN MALAYA

Willard A. Hanna

[In Malaya's Bilut Valley, government policy on land settlement has been adjusted to experience, which has shown the value of planning in advance, including doing work by contract and constructing houses before settlers arrive. Tight, careful administration has paid off.]

The government of the Federation of Malaysia has well under way a major program of opening up new lands for the resettlement of deserving but indigent families. In the course of implementing specific projects in Malaya during the past six years, it has learned a great deal regarding the uses of official paternalism, cooperative endeavor, and private enterprise.

The government's experiences of these last few years seem to demonstrate the validity of two theses: It pays, in the first place, carefully to cushion the initial shock to the migrant upon introducing him into a pioneer community. It also pays, however, to condition him rapidly to compete with his peers in earning his keep.

The government started out by plunging the settler into a primitive outpost, but subsidizing him with automatic issue of basic necessities. On the basis of sheer pragmatism, it has now shifted to the practice of moving him into a comfortably established settlement, but insisting upon a day's labor in return for a day's rations.

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The Bilut Valley Scheme

Much of the evidence with regard to the feasibility of alternative methods of operation has been provided by the first of the really large-scale ventures, one that is in many respects a pilot project, namely, the Bilut Valley Scheme, about 70 miles northeast of the federal capital of Kuala Lumpur. This scheme got under way in 1959, when carefully selected families—about 70 percent of them Malay, 20 percent Chinese, and 10 percent Indian—began to be brought in from all parts of Malaya to develop, and eventually to divide up among themselves, an extensive tract of virgin land.

Today some 600 families (4,000 persons) live in a flourishing little settlement in the middle of a huge rubber plantation in which each family either has already been, or soon will be, assigned its own seven-acre [2.8-hectare] plot. On the fringes of the settlement are located two-acre fruit and vegetable gardens, one for each family, where the settlers are able to produce bananas, papayas, rambutans, durians, and other fruits, and beans, cabbages, cucumbers, tomatoes, chilies, and other vegetables for their own consumption and for sale in nearby urban markets. In the gardening areas or on their half-acre homesites, the settlers are also able to keep cows, goats, pigs, ducks, and chickens to supplement further the family diet and income.

For various reasons, several dozen settlers have failed and given up in the six years since 1959, and a few have been evicted. Others have labored more or less perseveringly to achieve, as yet, only a subsistence level of living which still depends on continuing government support. More have begun to prosper modestly, but they look forward to the day in the near future when their rubber will come into production for their prospects really to brighten. By Malaysian farming standards, some have already struck it rich. Many have also launched out into subsidiary enterprises, which range from acquiring stud animals to operating a beauty parlor.

Adjusting Theory to Reality

The Bilut Valley experiment has redemonstrated that theory must be adjusted to reality, and that the unexpected result is often at least as important as that which had been intended. When the scheme was initiated, for instance, the controlling concept was that rubber would be the main cash crop and that a rubber price of at least M\$0.80 [M\$1=US\$0.31] per pound would ensure success. Since then competition from synthetic has driven natural rubber prices down to about M\$0.70 per pound, and a further drop to about M\$0.50 is clearly in prospect. It now turns out, however, that while rubber will afford a highly desirable extra, the settler can

make a very comfortable living from fruits, vegetables, and livestock, which were originally expected to provide mere supplementary income.

At the beginning, it was also anticipated that development of a sense of community loyalty on the part of a polyglot population could best be achieved if all shared alike in community labor—learning through cooperation, teaching each other, and gaining incentive as much through precept as through example. It has turned out, however, that the communal and inspirational aspects of life are perhaps less important than the competitive and the disciplinary. Malays, Chinese, and Indians, it now seems, acquire tolerance and respect for each other not just through living and working together on terms of perfect equality but also by demonstrating their special racial and individual qualities, each, in effect, challenging the other to match him.

The first of the Bilut Valley settlers moved into a desolate-looking area from which commercial operators had just extracted the marketable timber, leaving stumps, scrub growth, a few trails, and nothing in the way of amenities. The settlers were organized at once by their government supervisors into communal labor groups and set to work putting up temporary shelters of scrub wood, bamboo, and thatch and preparing the land for agricultural use. Later, when the government provided them with building materials, they built and occupied permanent houses of wood and corrugated iron; and, when the ground was ready, they planted and tended rubber trees which had been supplied by government nurseries. During this phase, each head of a family received a subsistence credit of M\$75 per month, sufficient for him to acquire such basic necessities as rice and dried fish at the cooperative store which provided just about the only community service.

After a year or two, the settlers had managed to make out remarkably well, but the reality was by no means as happy as early reports indicated. They had expended a great deal of time and labor, for instance, on clumsy attempts to build shelters, but the results frequently fell far short of the minimum specified standards. They had prepared the land and planted the rubber, but they had done so, as frequently as not, with amateurish inefficiency. They had failed, for instance, to eradicate the lalang grass which drains the nutrients from the soil or to tend the trees so that they would grow straight and even. Furthermore, since every family head automatically received a credit of M\$75 per month at the cooperative store—and could rather easily talk the management into letting him draw advance credit for the next month and the next and the next—few felt any particularly strong incentive to work hard on the rubber plantation or to put in long overtime hours on the home plots. The store

went deep into the red; many of the settlers shirked their assigned jobs; the plantation area looked seedy and the residential area shabby; and relations between settlers and supervisors began to deteriorate dangerously.

Then the government introduced reforms, the settlers complied—although not without protest and incidents of insubordination and expulsion—and a new operating procedure emerged, one which now serves as a model for other resettlement projects. The new system consisted in large part of the innovations of a new manager—the present one, who has now been on the job for about three years.

In the later phases of the Bilut Valley Scheme, the government contracted with private operators to prepare the land, plant the rubber, and build the houses. Only then did it move the new settlers in; and, when it put them to work tending the rubber, it trained them in a strict routine of maintenance. Meanwhile, the government had clamped down on easy credit at the cooperative store. Instead of the M\$75 subsidy, the settler now receives a M\$2.90 credit for every day that he actually works, and no credit at all if he fails to appear for duty or if his supervisors are dissatisfied with his performance. Furthermore, the government made it quite clear to the settlers that the M\$2.90 per day stipend, like other costs incurred in developing the land, was chargeable to their personal accounts, the total amount to be repaid with interest (3 percent) when the rubber came into production. It also introduced a system whereby each labor party worked a specific section of the plantation, and each member of the party knew that his own seven-acre plot would be in the area that he himself had helped to develop.

The result was improvement in almost every aspect of settlement life: in the financial condition of the cooperative store, the physical condition of the plantation, and even the upkeep on homes and gardens. A few of the settlers have failed to adjust to the new standards and have taken their more or less voluntary departure. More and more of the settlers, however, have made the discovery that it pays to work efficiently on the community project in order to gain extra time to work on their own—on their individual garden plots, for instance.

Sources of Income

In Bilut Valley, in the last several years, some of the fruit and vegetable gardens have begun to yield an income well in excess of the M\$2.90 per day to be earned by working the rubber. Some of the settlers who have already been allocated their personal seven-acre rubber plots now put in the minimum time necessary to keep them in good order. They forgo the M\$2.90 stipend, thus holding down their

indebtedness, and spend most of their effort on their gardens. One group of Chinese vegetable farmers, for instance, who were resettled from the Cameron Highlands when their land was expropriated for a hydroelectric project, have shown the others what can be done. Some of these farmers now clear M\$200 or more a month on vegetables alone. One of them has invested in a motor lorry to truck his own produce—and, for a fee, that of his neighbors—to points as far distant as Kuala Lumpur. Others have contracted with market-stall proprietors who make regular visits to the valley to pick up supplies. Some of the vegetable farmers already have bank accounts which total M\$5,000 to M\$6,000, with more in prospect.

The profits from vegetable gardening have been rivaled lately by profits from livestock. The project supervisor, working quite independently of any official directive or subsidy, has developed a program whereby the more energetic settlers can acquire cows, pigs, or goats. A responsible settler may, for instance, take custody of a pregnant cow, care for it until it produces its calf, either sell the calf if it is a male or rear it and return it to cancel out his debt if it is a female, and then go on to build up a whole herd of his own. Or he may take custody of four young goats or pigs, rear them, return one adult female in discharge of his debt, and dispose of the others as he sees fit. One of the settlers has acquired a fine bull, another a fine boar, both of which are put out to stud at a fee. The settlement herds are rapidly multiplying, and personal incomes are mounting. One Chinese settler, for instance, recently sold 42 pigs at M\$160-M\$170 per head; after paying all his expenses, including the cost of the feed advanced to him by an urban dealer, he realized a profit of at least M\$2,000 for eight months' work.

The Chinese, of course, traditionally favor the pig, the Indians the cow, and the Malays the goat. At Bilut Valley these days, the Indian is also beginning to breed pigs and the Chinese to breed cows. The Malay, too, is branching out, but never so adventurously as for an orthodox Muslim to try pigs, although he does not object if his neighbors keep them.

Thanks to the original suggestion of the settlers themselves and the subsequent efforts of the project director and of a young American assistant—a Peace Corps member—who have themselves set the example, the newest development in Bilut Valley is scientific chicken farming. The settlers are now beginning to keep not just the kampong fowl, which scratch about in the roadways for their living, but also specially bred layers and meat birds which live out their lives in sanitary wire cages, patiently consuming commercial feed and concentrating obediently upon producing eggs or gaining weight. One Malay farmer, the earliest and most enthusiastic of the poultrymen, now has a flock of about 120 birds, some hundred of which are

already mature. He gathers 60 to 75 eggs a day and realizes, on eggs alone, a net profit of about M\$80 per month. He keeps careful record of exactly how many eggs each hen lays and markets the non-producers. His own and other Bilut Valley chickens and eggs are now beginning to supply the nearby markets and restaurants, which formerly depended on Kuala Lumpur and Singapore.

At Bilut Valley there remain many shortcomings and complaints with regard to the project, but the evidences of success are more significant. The residential area is not as handsome as those of some of the newer settlements which have been constructed in toto by professional builders, but some of the more prosperous residents are beginning to remodel or rebuild their homes in a manner and on a scale much more impressive than the government standard. Some of the more ambitious among them are putting up little subsidiary buildings—eating stalls, barber shops, and other appurtenances of an established community, not all of them of a slightly design, but nevertheless indicative of both enterprise and prosperity. Such extension of enterprise serves, of course, to create new jobs and to teach new skills, so the community may be able to offer alternative opportunities to those of the younger generation who wish to look beyond farming.

The fruit and vegetable gardens and the livestock sheds are acquiring a look of permanence, so much so that the supervisors must keep a vigilant lookout lest they encroach on areas intended for other uses. One of the settlers, for instance, was recently required to dismantle and reassemble a chicken house which, in defiance of sanitary regulations, he had attached to his own home. Although the rubber areas do not look as well laid out or as well maintained as those of the big private estates, nevertheless they are well up to the average smallholder standard. In other words, even though the Bilut Valley settlers suffer some of the penalties of experimental pioneering, they also enjoy benefits, notably a time lead of several years in establishing themselves as prosperous landowners.

Prospects

The basic difficulties of Bilut Valley today are no longer those of a frontier outpost but of a settled community pioneering new modes of social and economic adjustment on the part of once underprivileged, now suddenly privileged, Malays, Chinese, and Indians. Some of the difficulties are those to be found in any community anywhere in Malaysia, the sort which the settlement supervisors pass over to the local police—theft, assault, etc. Other difficulties include those passed back by the supervisors to Kuala Lumpur, which will have to determine, for instance, what is to be done about sale or inheritance of title to the now valuable lands which the settlers

have developed. Still others are those which the supervisors may very soon disqualify themselves from handling, namely, the general problems of further development as Bilut Valley moves out of the phase of rural project into that of semiautonomous village. Very soon the Bilut Valley settlers will begin to pay off their accumulated indebtedness to the government (about M\$5,000 per family) and thus demonstrate conclusively that they have risen from indigence to self-sufficiency—some of them, indeed, to real affluence and influence.

[Excerpted from "Cushioning and Conditioning the Pioneer: How Indigent Settlers Achieve Self-Sufficiency," American Universities Field Staff Reports Service, Southeast Asia Series, New York, Volume XIII, Number 20 (Malaysia), \$ 1.00, pp. 1-7.]

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RESEARCH

RESEARCH ON DEVELOPMENT OUTSIDE THE DEVELOPING COUNTRIES

Until recently, economic and social development proceeded quite spontaneously. With minor exceptions, only the last twenty years have seen concerted efforts to accelerate, guide, and control development. The world is now engaged in such an effort—to plan and induce development—on a gigantic and unprecedented scale. If much of the effort is not to be wasted, it is essential to arrive at a better understanding of what development is and how it can be induced. Our experience has already discredited many cure-alls and would-be remedies. Yet, after all, it is surprising how little we understand this complex and many-faceted process.

One way to acquire a better understanding is through the trial-and-error method—by learning from experience. Some of it must be so acquired. Research, however, can often shorten the path. If closely related to experience—both the successes and the failures—it can produce a synthesis that might never come simply from observation of development experience. Furthermore, research plays a key role in diffusing the lessons of experience.

The kinds of research which have a bearing on economic development will be, of course, as varied as the process itself is complex. Some may concern problems of planning on the country level and will prove relevant to many or even all countries; others may be highly specific, involving attitudes to specific changes in specific areas or the potential uses of a local crop, for instance. Some development research, particularly of the latter variety, will only get done in the less developed countries themselves, whether by government, universities, or others with a traditional interest in local problems. An important question, therefore, for the development professional is how much and what kinds of research should be undertaken in his country. Four articles in the January 1967 issue of the DEVELOPMENT DIGEST dealt with this group of questions.

Fortunately, no country need attempt the impossible—to be self-sufficient in development research. There is considerable scope for exchange of the results of research and experience among less developed countries, and such possibilities ought to be pursued. The major possibility for international division of labor with respect to research, however, is between the higher- and lower-income countries. Partly as a result of their aid programs, the higher-income countries are becoming more interested in understanding the development process. Their immense existing research establishments have great potential for development research, especially on the more general problems. Development professionals will want to keep as informed as possible about such research and to consider how the results of foreign research can be applied or adapted to their own country.

AID's Research Program on Development

Of the vast amount of pure and applied research carried on in higher-income countries, only a minute fraction concerns the development process. Most of this fraction is undertaken by private industry, foundations, or universities, and its direct application to development problems is often a by-product accidentally related to its original purpose.

The research program of the US Agency for International Development is an explicit and conscious effort to improve our understanding of development in ways that will be relevant to development policy; it is "designed to provide specific breakthroughs in knowledge and technology which will speed up the development process." Compared to the total amount spent on research each year in the United States, the AID research program is miniscule—expenditures have totalled \$34 million over the last five years. The program is concentrated on discovering ways to make the Agency's limited funds do a better job by improving understanding of the development process

as a whole and of the role of aid in that process. In this way, it is hoped, as is often the case with research expenditures, that the relatively small expenditures will have a very large return in the long run.

The AID research program is a collection of over eighty projects selected to "focus... on those problems which have world-wide applicability in their results." Research is actually done under contract by organizations other than AID in order to take advantage of existing research potential in the United States. Judged by the amount of money spent, American universities do almost half of the research, private businesses and nonprofit organizations do just over one-third, other branches of the US Government do about one-sixth, and a small amount is done by international organizations and various foreign entities. The 14 largest research projects, which are costing from \$1 to 3 million each, account for 60 percent of the effort. Another \$2 million annually is spent by AID missions in less developed countries, and a small amount of research is done by the Agency itself.

Priorities

As William Gaud, Administrator of AID, has said, "so little is known about the process of development—and particularly about how to accelerate development—that the possibilities for research in this field are almost unlimited. The prudent manager of a research program must above all discriminate, select and weed out." AID has confined its program to six broad areas: agriculture and rural development, studies of economics and planning, education and manpower planning, health (including nutrition and population), institutional and social development, and industrial and urban development.

Studies of agricultural and rural development make up about 40 percent of the program. Economic and planning studies account for over one-fifth of expenditures; some of these are focused specifically on how AID can improve its program, and results are of no direct interest to less developed countries. Research on education (17 percent), health (11 percent), social and institutional development (8 percent), and industrial and urban development (3 percent) have accounted for smaller shares of the program.

At the present time, the program is being focused on certain high-priority areas considered to be particularly critical to development: food supply, population, nutrition, and sectoral economic analysis.

As the AID research program continues, it generates an increasing flow of published or publicly available results. The DEVELOPMENT DIGEST frequently reprints or reports on the most significant of these research results as part of its general coverage of results of development research and experience of wide relevance. Readers interested in more information about AID's research program or wishing to obtain results not published in this journal should contact:

Planning Assistance Division
Office of Program Coordination
Agency for International
Development
Washington, D. C.

for matters relating to the
economic research program

or Executive Secretary
Research Advisory Committee/
Technical Assistance
Research Council
Office of Technical Cooperation
and Research
Agency for International
Development
Washington, D. C.

for information on all other
research programs.

Some Important Projects

A few of the larger research projects of greatest significance to development professionals in less developed countries are described below.

The largest AID-supported research project, and one which is symbolic of the broad-based approach to development, is the program of the Land Tenure Center of the University of Wisconsin. The Center has many research workers investigating various economic, legal, and other factors related to agrarian structure and rural development. The six areas of concentration are: land-tenure policy, taxation, migration, farm size and technology, cost-price relationships, and basic principles of land reform. Field research is going on in seven Latin American countries, and in three of them land-tenure centers have been set up.

The Center's research has already produced over 70 publications, most of which are available upon request to the Center. Moreover, a large library and a fund of expertise on land-tenure problems have been built up. Of 200 graduate students, many of them Latin American, trained at the Center, a number now hold posts in developing countries. The Center has become an international development resource, ready to meet requests and capable of providing training and advice.

In a similar fashion, the various aspects of transport and development are being studied by the Brookings Institution's Transport Research Project, which has already been extensively reported in this journal (see DEVELOPMENT DIGEST, July 1965 and July 1966). Costs and benefits of transport are studied in general, for specific countries, and for specific modes of transport and transport projects. One of the activities of the project has been to synthesize the results of past research in the field of transport.

Two centers supported by the economic research program are studying problems of planning and development. American economists working under the Economic Growth Center of Yale University have been given the opportunity to undertake country studies of economic growth. Books on Brazil, Nigeria, the United Arab Republic, and Ceylon have now appeared.

The Center for Development Planning of the National Planning Association has been investigating a great variety of facets of planning. Early studies focused on theoretical aspects of planning. The Center has also worked to synthesize and disseminate acquired knowledge on the techniques of planning and on the "state of the art." This activity has included, for example, publications on what has been learned about planning capital flows and about use of the budget in planning (see DEVELOPMENT DIGEST, July 1966).

Since 1965, the Center has shifted its emphasis to the development and testing of a growth model for small, open economies. Its research teams have moved to the Philippines and Thailand. In addition to its publications, it has produced many working papers, which are usually available upon request.

Other projects. Most other large projects are devoted to more specific problems or designed to produce a highly specific product, still, however, of very wide relevance.

Some of the programs in agriculture are particularly interesting. One carried out by the US Department of Agriculture is conducting extensive research on factors associated with differences and changes in agricultural production and productivity in less developed countries. Under AID auspices, the Department of Agriculture is also studying demand prospects for the agricultural exports of less developed countries, is trying to develop and stimulate use of improved food grains for Africa, etc.

Michigan State University has a large program in Brazil, Nigeria, and India to find out how farmers get information on farming practices, how such knowledge spreads, and how it affects production. In a later phase, the project intends to experiment to study

comparative rates of adoption of new practices under rural development programs using different incentives, communication channels, and techniques. The utility of the results of such programs to planners is obvious. They are now beginning to be published.

Another phase of the agricultural research program concerns the assembling of existing data. Purdue University is analyzing the results of American research programs in agriculture; North Carolina State University is systematizing soil-nutrient data for Latin America.

In the field of education, Educational Services Incorporated is developing a new curriculum and method for teaching mathematics in Africa and another to teach beginning science in English-speaking Africa. New techniques for training English teachers are being explored by English Language Services Incorporated.

Health research is being rapidly expanded. One of the oldest and most fruitful programs is that for malaria eradication. It is conducted by the US Public Health Service in cooperation with the World Health Organization and the Pan American Health Organization; it now concentrates on adaptive research concerned with getting material to the right place and person, and dealing with new, insecticide-resistant strains of mosquitoes.

One priority area of the new program is the development of high-protein supplements, especially for pre-school children. The US National Institutes of Health, the Department of Agriculture, the Massachusetts Institute of Technology, Cornell University, the Institute of Nutrition of Central America and Panama, and the British-American Hospital in Lima, Peru, are all working on aspects of this problem under AID contracts.

W. I. J.

SOME TECHNICAL RESEARCH PROBLEMS FOR AGRICULTURAL DEVELOPMENT IN TROPICAL AFRICA

Peter F. M. McLoughlin

[The World Bank has conducted a thorough study of agriculture in tropical Africa. Research results are summarized and recommendations are given, including need for international cooperation and study of farming as a system.]

To assist its African member countries, and itself, in dealing more effectively with the problems of raising the productivity of agriculture in tropical Africa, the World Bank (IBRD) organized a multidisciplinary study team in early 1963. This writer was the team's economist. The mission's report will be published by Johns Hopkins Press, in two volumes, in April 1967. While the report covers all major aspects of tropical Africa's agricultural development, this paper will discuss only a few of the major items related to technical research. Much of the paper is based directly on the chapter on technical research in Volume I of the report.

The first broad task of agricultural research is to provide an understanding of the physical environment. For tropical Africa, with its heterogeneous environmental conditions, this is an enormous undertaking. The second task is to evolve a package of new inputs of all kinds which will provide, in any particular situation, the means by

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which the farmer or herder may improve his productivity on a sustained basis. Farm systems and farmers are also quite different from place to place. These new inputs must be capable of fitting into the existing and varied farming systems and their constraints and must be economically secure and attractive.

Understanding the Physical Environment

The study of the natural environment must be particularly emphasized—African soils are generally poor, and rainfall deficient and unreliable over large areas. These factors set limits to 1) the type of crops which can be grown, 2) planting dates, and 3) grazing available for stock. There is thus a premium on proper crop selection and planting dates. The average amount of rain which falls over a period of years is normally less significant than the probability that, within a given agricultural season, enough rain will be available to germinate seed and ensure seedling survival. In short, given the range of altitudes, soils, rainfall patterns, etc., even over limited areas, obtaining accurate estimates of the physical milieu is particularly difficult. An adequate understanding of the development problem must also be based on an appreciation of dynamic interaction of man and his natural environment; because of demographic and technological changes, land-use systems are altered over time, with repercussions, in turn, on production possibilities. Constant assessment of the relationship between the number of people and stock and their means of support is required.

It is critically important, in other words, that no development project or scheme be launched without a sound knowledge of the relevant natural conditions or the wise use of this knowledge. In many areas, there is a significant body of broadly based information on soils, climate, vegetation, water supplies, topography, and so on. But most schemes or projects require a more particularized body of information, pertinent to a given locality. The lack of more detailed knowledge in a project or scheme area contributes to failures. The continuing impatience to begin projects, often on the part of nontechnically oriented politicians, ensures that a large percentage of development attempts will continue to fail and large investments to be wasted, especially those in irrigation, settlement, mechanization, state and group farms, and other large-scale efforts at modernization. Even when the investment is geared to the servicing of many small farmers, such as fertilizer programs or the introduction of new varieties, the range of soil and rainfall conditions normally precludes the satisfactory implementation of "blanket" policies over the entire area.

This is not to suggest, however, that data on ecological parameters should be collected indiscriminately—that can be unrewarding

and costly. The nature, scope, and costliness of any study must be related to particular development objectives and the importance of those objectives, particularly in view of the shortage of research resources. When crops repeatedly fail to mature because of frequent droughts following initial sowing, the critical need may be to develop more information on the degree of probability of a minimum adequate rainfall during the early part of the season. Irrigation schemes require detailed investigation into soils, climate, and topography to determine crop types and irrigation and drainage requirements.

Soil surveys are expensive and must be kept to a minimum. Local knowledge of crops and fertility may help; but where new crops are contemplated, a detailed soil map may be necessary. But even then the focus may be limited to those characteristics which are immediately relevant—soil depth, degree of acidity (pH), capacity for water retention, susceptibility to erosion, etc.

Finding Improved Input Packages

It is easy to understate the valuable work accomplished along some lines by tropical-African research stations. The expansion of export-crop production owes much to the development of improved varieties suited to local conditions through selection and by hybridization. Many pests and diseases have been identified and methods of combatting them devised. Considerable work in some places has been done on fertilizers, usually in connection with the export crops. Food and subsistence crop research of all kinds has been much less impressive, though some work has been done in developing higher-yielding, more rapidly maturing, or more disease-resistant varieties.

It was usually found, however, that agricultural development has been hampered because research has not provided answers to the problems of the farmer. Even where a technical solution has been devised, it often fails to meet the tests of "feasibility" and "appeal." The technical solutions must be capable of being adopted by farmers, who have constraints to their farming such as labor shortages. The technical solution must also have that degree of financial and economic appeal which will motivate the farmer to adopt it. In short, research is not invariably so far ahead of practical application that the major task is to secure its dissemination through extension and training. Research has all too often been based on an inadequate understanding of existing agricultural systems, of the constraints to which African farming is subject, and of the types of innovations which can be applied in practice and which respond to farmers' needs.

It is extremely difficult to devise methods of agricultural research which will meet these different needs. Agricultural production itself is complex, and many inter-related economic, physical, biological, and social factors are involved in its improvement. It is virtually impossible to take all of these into account, and only a few may be tackled simultaneously. Researchers have to break down a particular problem into its components, select those which appear to be particularly susceptible to improvement by research, and then define the potentially fruitful ways of approaching them. The choice of factors on which to focus is particularly difficult since any one problem probably has more than one "solution." One may deal with parasites either by breeding a resistant variety or by developing an effective pesticide; one may fit a desired crop into a rainfall pattern by changing the length of the vegetative cycle or by supplying irrigation water; it is possible to increase soil fertility by devising a crop rotation which includes legumes or by using fertilizers and manure.

The choice that is made has far-reaching consequences in terms of other development measures that must be taken or of other lines of development that must be pursued. A decision to improve the yields of the main subsistence grain crop through the application of fertilizers makes it necessary to develop a cash crop which would yield sufficient money to pay for the fertilizers; this need for cash would be less urgent if research had concentrated on finding higher-yielding varieties of the grain. The decision to introduce exotic dairy cattle in some areas has necessitated far more sweeping changes in traditional agriculture and animal husbandry than would have been necessary if a more modest objective of upgrading local cattle had been adopted. If effort is concentrated on introducing more productive but less hardy cotton varieties, interplanting of cotton and food crops must cease, and the farmer must be able to cope with a larger acreage or shown how to adopt a feasible and effective crop rotation. Research orientation must be influenced, in sum, not only by the potential benefits to the farmer but, equally important, by the possible repercussions on his whole method of farming.

Overspecialization and Oversimplification

Research in many cases has also suffered from excessive technical bias and oversimplification. There has often been too exclusive a preoccupation with the maximization of output per unit of area without full regard for all the necessary related inputs and the farmer's capacity to provide them. When the new practice or technique worked out by research requires substantially more labor, it may be of no practical relevance to the farmer who regards labor, not land, as the output-limiting factor. Research specialization and oversimplification has also led to the concentration on individual crops or

improvements without sufficient regard to the farming pattern. Research is done on particular crops—coffee, cocoa, tea, cotton, oil palm, etc.—and optimum planting dates, cultural practices, fertilizer applications, and so on are worked out for each crop in isolation. But the optimum planting date in terms of yields for one crop may not be the best when the farmer's other crops are considered and when account is taken of the best way in which the farmer can use his labor as a whole. Recommendations for green manuring or fertilizer on manure applications can hardly be geared to one crop in disregard of those that precede or follow it in rotation. One innovation normally necessitates others of varying complexities. Yet such recommendations continue to be made in isolation.

Unsolved Problems

Several problems which hamper agricultural progress severely have not yet been solved by research, though considerable work has been done. Some problems are rather general, though they may be more or less acute in different regions; others are more specific and restricted to particular crops or areas. Three important general problems which may be commented on here are those of soil fertility, food crops, and animal production.

Soil Fertility

No really satisfactory and definitive substitute has been found for bush fallow as a means for maintaining soil fertility. Most soils are deficient in the prime determinants of fertility—structure, chemical composition, and texture. They are of poor parent material and low organic content. Natural conditions, particularly rainfall patterns, are often unfavorable to optimum activity of soil micro-organisms. With cultivation, the already precarious equilibrium is easily upset, and nutrients are normally taken from the soil more rapidly than they are replaced. It has not been possible to deal with the as yet unexplained failure of legumes to produce nodules and to fix nitrogen under tropical African conditions. Nor is it yet determined whether chemical fertilizers can raise yields on a sustained basis without devising a system of replenishing the soils' organic matter. Green manuring is generally not satisfactory, since the crops turned under tend to decompose either too quickly or too slowly. Organic manure requires an integration of agricultural and animal husbandry, including the development of suitable forage and fodder crops. Over most of livestock-keeping Africa, conditions are too dry, among other reasons, for this sophisticated pattern. The problem becomes more urgent as, due to population increase, the number of areas which still have land sufficient to permit bush fallowing is rapidly decreasing; a more permanent and stabilized agriculture requires much more fertility research.

Food Crops

Food production for subsistence claims most of the farming family's labor and cultivated area. The low level of productivity in the crops has often impeded development, and the lack of improved varieties and techniques of food production has meant that farmers must restrict the time and space devoted to cash crops. The low potential of existing varieties often makes the use of fertilizer uneconomic. In many other areas with short agricultural seasons, early planting of cotton has been difficult to achieve because research has not really found the means of reconciling it with the vital subsistence production. In some coffee areas, the need to put so much land into the low-yielding staple banana varieties has limited the area planted to coffee. The stock-carrying capacity under traditional management of the different types of grazing land has yet to be determined.

Musts for Effective Research

These aspects, and many more not touched on here, highlight some of the problems of technical research for agricultural development. In our opinion, effective agricultural research can be developed only if the following are borne in mind; they will be discussed separately below.

- 1) Research must be based on a sound knowledge of local farming systems.
- 2) More attention must be paid to the improvement of food crops and of the general system of agriculture.
- 3) The economics of various innovations must be fully appreciated.
- 4) Sufficient demonstrations and trials must be undertaken in the field under actual farm conditions to test the practicability of recommendations.
- 5) Staff must be made available in adequate number and quality and for sufficiently long periods.
- 6) There must be greater international cooperation in the exchange and utilization of research results.

Two more comments may be added. One is that the understanding of indigenous farming should extend further than the examining of the factors limiting the farmer's output and conditioning his responses. It must also encompass the whole problem of the dynamics

of land use—the relationship of man to his environment is constantly changing.

The second comment relates to the means by which this understanding is acquired. It is difficult because research has to be broken down into many specialized tasks requiring specialists of various kinds whose work must be coordinated. Theoretically at least, the problems on which research should focus and the human, economic, and environmental parameters within which it must be conducted should be determined by the cooperative efforts of agricultural-extension workers, ecologists, economists, sociologists, planners, and others. Administratively, this is difficult, and the markedly different orientations among such a range of professional experts often preclude even a working system of communication—a common language.

Close Contact with the Farmer

The research station must be in close and continuing communication with agricultural and veterinary field staff who should be aware of the practical problems of the farmer that require attention. Key research personnel should be given an opportunity to get first-hand knowledge of the whole environment in which their contributions are to be made. Research personnel are still almost wholly expatriate and normally have come with a knowledge of temperate, not tropical, agriculture and farmers. It will be some decades yet, on average, before a sufficient number of African scientists will be available. Nor may one presume that the African scientist automatically understands the agricultural systems of his own country; he is often as far away from a detailed knowledge of current local practice as the expatriate. Improvement could be effected in many areas by the assignment to the research station of experienced field and extension officers. Where such a general agriculturalist had been so posted, we noticed the results to be good.

General Agriculture and Food Production

There are far too few research stations dealing with general agricultural problems and food crops. Yet, an integral approach to the farm problem is essential if research results are to appeal to the farmer. Much research, particularly, but not exclusively, in French-speaking West Africa, is carried out by organizations with headquarters in Europe which concentrate on individual cash crops. There are individual organizations devoted to research on oil crops, cotton, coffee and cocoa, fruits, rubber, etc. There is only one organization, to the best of our knowledge, focusing on food crops and general farm-system problems. There are obvious advantages to such specialization, including an ability to recruit expert

personnel and obtain relatively quick results, and they should undoubtedly continue to function. But much greater emphasis has to be put on general agricultural research stations so that the work of specialists may be related to the farm problem as a whole.

Economics

The third requirement—more attention to the economic aspects of research recommendations—would be met already, certainly in part, if there were a better understanding of the rationale and constraints of local farming. It would help if an agricultural economist were posted to the more important research stations. At minimum, given the shortage of such experts, an economist should spend some time at the research stations to evaluate the economies of research recommendations and to improve the economic orientation of current or contemplated research. Among other things, a resident agricultural economist can make farm-management studies in the area which will highlight the practical problems faced by the farmer. In the several instances where we found economists on research stations, the benefit was quite apparent.

Trials and Demonstrations

Another requirement—sufficient and thorough trials and demonstrations—must be met for two reasons. The great variety of environmental conditions means that an innovation suitable to one area may not be so in the next. But the innovation must be tested, insofar as possible, under actual farming conditions before the attempt is made to disseminate it through the extension service. While the Belgian and French research programs were not fully successful in dealing with many of the sociological aspects of research, there was a heavy emphasis on the relationship between the research stations, on the one hand, and field trials, experimental farms, and pilot projects, on the other. As a principle, this preoccupation with the practical application of research is sound; it is a practice which is still the exception and not the rule and needs to be extended greatly.

Adequate Staffing

The adequate staffing of research stations is increasingly difficult, and the situation may well get worse before it improves. Very few Africans have both the qualifications and the inclination to make a career of agricultural research. Too few are being graduated with agricultural degrees. Many of the expatriates who fill research posts feel they have no assured future, and it is difficult to persuade young Africans to pursue the long training essential for qualification in tropical agriculture unless there are definite opportunities for a lifetime career. There are many unfilled posts, and many others

are staffed by people less qualified than their predecessors—even these tend to be on short-term contracts. But, long-term career opportunities are needed to attract personnel and to give them the deep knowledge of both the theoretical and the practical problems that can be acquired only through long experience. Moreover, continuity of personnel is vital to agricultural research. In most cases, satisfactory results can be obtained only by many years of continuous research and experimentation. As it is now, the rapid personnel turnover usually results in the discontinuation of the old research before it has reached conclusions and the adoption of new projects which, in turn, are left unfinished.

International Cooperation

The world, including tropical Africa, is dangerously short of personnel qualified in tropical agriculture, a shortage which must be obviated. This study team had neither the time nor the competence to examine this aspect of the problem in any detail. One possibility, however, might be to provide the necessary career opportunities within international organizations and regional centers or within national agencies, foundations, and universities in the more developed countries. An example of the former is the International Institute of Tropical Agriculture, currently being established in Nigeria with the support of the Rockefeller and Ford Foundations. It will combine food-crop and other research with advanced training in tropical agriculture. France has maintained a number of research organizations which have a permanent cadre of scientists. Under arrangements with the appropriate government, these continue to conduct research in most countries formerly under the French flag. Except for the Empire Cotton Growing Corporation, there are no corresponding British research organizations.

In view of the worsening shortage of research personnel, it is particularly important that investigations focus on the critical problems. But it also has become increasingly necessary to disseminate the results of research as widely as possible. We noticed many instances in which progress in one area undoubtedly would have been more rapid had accumulated knowledge from a similar area in another country been examined. The flow of information between French- and English-speaking Africa has been very minimal indeed. The few international meetings and scientific periodicals undoubtedly provide some opportunities for disseminating knowledge.

It seems to us, however, that there is a critical need for less piecemeal, more systematic and periodic assessment of the research than has been accomplished. Such appraisals, for instance, could be carried out for various groups of research institutions that operate under more or less similar ecological conditions. This

could lead gradually to greater coordination and economy of research efforts. Perhaps an international organization such as the FAO, or a combination of a number of the larger foundations, could test out the feasibility of this approach on a pilot basis.

[A summary prepared for the DEVELOPMENT DIGEST. The full results of the IBRD study of agricultural productivity in tropical Africa, including much of the material presented here, will be published as Agricultural Development in Tropical Africa, by the Johns Hopkins Press in April 1967.]

TWO RECENT BOOKS

Lewis, W. Arthur, Development Planning: The Essentials of Economic Policy, London, George Allen & Unwin, 1966, US\$ 4.95, 278 pp.

Regular readers of the DEVELOPMENT DIGEST are already familiar with the writings of W. Arthur Lewis. The present book does not reveal a radically different development "philosophy"; rather, it sums up Lewis' thought very neatly. Unlike his earlier book, The Theory of Economic Growth (Homewood, Ill., Irwin, 1955), a general and theoretical treatment, Development Planning concentrates on planning and policy issues. It is "a short and simple introduction" on "how a Development Plan is made, what the chief snags are, and what distinguishes good planning from bad." It is "written for the intelligent layman, presupposing the equivalent of one year's courses in Economics." The book can serve to stimulate rethinking of important development issues or would make a solid and sensible introduction or text.

Emphasis is on policy. Lewis feels that the state should concentrate on rationalizing its own expenditures, and that efforts to supply infrastructure and conditions favorable to growth are likely to be a full-time job, even without active government management of industry and commerce. In fact, trying to plan the decisions of the private sector, over which the government has no direct control, is the difficult part of planning. Too many planners fall back on projections based on guesses when they ought to be thinking up policy measures to guide the private sector toward planned ends.

Lewis attaches importance to macroeconomic planning and projections, reminding his readers,

however, that they guarantee only consistency—not feasibility, realism, or plan execution. One-third of the book is devoted to an "arithmetical exercise"—the elaboration of a plan for a hypothetical country, projecting government receipts and comparing them with desired expenditures, preparing input-output tables, evaluating manpower training needs and availabilities, estimating what should be spent to insure their supply, . . . The exercise is instructive and easy to follow. It demonstrates that the economic theory behind such planning is not difficult. However, the process is time-consuming—two years are needed to prepare a plan properly. Little attention is paid to techniques of project preparation and evaluation.

Lewis describes policies appropriate to different stages of growth. Very poor countries must find the engine of their growth in exports. Later, import substitution becomes more important, although, at that stage, failure to achieve an agricultural breakthrough will ultimately arrest growth. Comprehensive growth models may be a virtual necessity for large, sophisticated states. For small, simple economies, building such models may be unnecessary and a waste of resources.

The book is full of rules of thumb and practical planning hints, accompanied by simple, relevant numbers. For instance, given that saving and investment are the keys to growth, private and government consumption must fall as a percentage of GNP. Government revenues should reach about 17 percent of GNP. However, absolute reduction of consumption or its relative reduction by more than 0.5 percent per year is apt to provoke revolt. Or again, planners find that demand for services, such as curative medicine and primary education, is insatiable. The answer is to decentralize, putting both administration and financing of such services at the lowest administrative level consistent with economies of scale.

Kilby, Peter, African Enterprise: The Nigerian Bread Industry, Stanford (California), Hoover Institution, 1965, US\$ 2.50 (paper-bound), \$3.50 (hardbound), 112 pp.

Many writers on development have stressed the crucial importance of entrepreneurship. Small industry has received special attention because it offers entrepreneurial possibilities to numerous citizens of less developed countries, and because it might induce saving and investment that would not otherwise take place.

For all the theorizing about entrepreneurship and small industry, there has been little systematic study of successes, failures, and the concrete problems of local entrepreneurs in low-income countries. Two continent-wide studies are the National Planning Association planning pamphlets on African entrepreneurs, by

Theodore Geiger and Winifred Armstrong, and on Latin America, by Frank Brandenburg (Washington, 1964; summaries in DEVELOPMENT RESEARCH DIGEST, III, 1, July 1964). At the same time, more specific studies are needed. Peter Kilby's careful and exceedingly thorough analysis of the Nigerian bread industry helps fill this need.

Bread-eating and bread-making were introduced into Nigeria by Africans returning from Brazil and the West Indies. Only after a long period of "apprenticeship" did Nigerians enter the baking profession when bread consumption began its phenomenal expansion after World War II. Bread-making is now the third largest industry controlled by Nigerians and the fastest growing. It is dominated by firms using modern machinery and techniques, some of them invented in Nigeria.

The author examines the growth of the industry, the patterns of consumption, plant organization, distribution, and patterns of entrepreneurship. He studies the many possible factor proportions that can be used in production and the advantages and difficulties of each. In baking, machine operations have advantages over making bread by hand, but the largest, most "modern" units are not necessarily the most efficient. The larger firm has advantages in division of labor, bulk-purchasing, credit; the small modernized firm in managerial efficiency and selling. The medium-sized firm may be squeezed out. For each size of firm and for each sub-market specialization, there is an optimum technology of production.

The parts of the book most apt to interest planners are those about use of resources and about the entrepreneurs. Full utilization of machines was not a crucial factor in the attainment of peak efficiency. More important was minimizing waste of imported wheat flour, the most costly input. Success or failure of firms was largely determined by quality control—judging public tastes and making bread accordingly—and by managerial ability to minimize careless workmanship and pilfering. Successful entrepreneurs came from almost every conceivable occupational and educational background. Some of the most successful were not literate. In general, former bakers were better at quality control, former traders at aggressive marketing.

This analysis in depth of one industry is helpful for understanding both the Nigerian economy as a whole and industrialization opportunities in many other countries. It is interesting despite the fact—or perhaps because of it—that, "considered from a purely nutritional point of view, ... the cereals and groundnuts of... [northern Nigeria] could provide the same caloric and nutrient value at a third or a quarter of the cost. Yet, for the present, consumer preference in... [southern Nigeria] lies with bread."

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